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SOUTHERN NYE DESERT BIGHORN

HABITAT MANAGEMENT PLAN

NS-WHA- (BIGHORN SHEEP)

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BUREAU OF LAND MANAGEMENT
STATELINE RESOURCE AREA
LAS VEGAS DISTRICT

AND

NEVADA DEPARTMENT OF WILDLIFE
REGION III
LAS VEGAS, NEVADA

#M534100

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ABSTRACT

The Southern Nye Bighorn Habitat Management Plan (HMP) includes three habitat management areas (HMAs): Last Chance, Specter Range and Bare Mountain. The Last Chance and Specter Range HMAs are within the Las Vegas District and the Bare Mountain Range HMA is split between the Las Vegas and Battle Mountain Districts.

The Nevada Department of Wildlife (NDOW) and BLM surveyed and evaluated the HMAs as potential bighorn sheep habitat in 1986, in preparation for the development of this HMP. The HMP presents an organized approach to the establishment or reestablishment of desert bighorn sheep in potential and historic range and for the maintenance, enhancement, and monitoring of their habitat.

Various HMP objectives are designed to enhance the quality and quantity of such habitat elements as food, water, cover and living space. Planned actions were developed to accomplish the stated objectives by applying wildlife management techniques (i.e., water developments) and monitoring of habitat conditions throughout the HMAs.

Most of this HMP is expected to require five years to implement. Cost and implementation schedules are based on a five-year period. However, depending upon funding, manpower and overall district priorities, the implementation may take longer than projected. Due to biological reasons, some of the objectives will take 15 or more years to realize.

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An annual evaluation report will be used to determine overall progress towards HMP objectives and implementation, and to summarize existing information needed for future HMP revisions.

Prior to any project related development activities involving surface disturbance, as standard operating procedures, a Class III cultural resource inventory will be conducted in compliance with BLM Manual 8100.

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SOUTHERN NYE DESERT BIGHORN

HABITAT MANAGEMENT PLAN

I. INTRODUCTION

A. Reasons for Preparation and Justification

The Nevada Department of Wildlife (NDOW) has proposed to reestablish-establish desert bighorn sheep into three mountain ranges within Southern Nye County. These are the Last Chance Range (also known as the Johnnie Range), the Specter Range, and Bare Mountain (see Map 1). Most of these ranges are managed by the Bureau of Land Management (BLM), Stateline Resource Area, Las Vegas District. However, approximately one-half of Bare Mountain is administered by the BLM, Tonopah Resource Area, Battle Mountain District, and approximately 1,770 acres of the Specter Range lie within the Nevada Test Site (managed by the Department of Energy under withdrawal). Implementation of the HMP on Bare Mountain will be cooperatively done by both the Battle Mountain and Las Vegas Districts, and NDOW.

On May 9, 1987, the Nevada State Board of Wildlife Commissioners approved the Last Chance Range as the second statewide priority for reestablishment in 1987-88 and the Specter Range as fourth priority in 1988-89. Bare Mountain was not prioritized because the bighorn sheep reestablishment will take place beyond the life of the Commission's "Big Game Reestablishment and Transplant Plan" which

only covered through 1989. However, Bare Mountain is covered under other NDOW plans.

Desert bighorn sheep populations declined drastically since the 1800s. In some mountain ranges remnant populations continue to exist while in others, populations were completely eliminated. Within land administered by the Las Vegas District, seventeen mountain ranges now have bighorn sheep and twelve mountain ranges are historic or potential habitat without current populations of desert bighorn. NDOW has had dramatic success in reestablishing desert bighorn sheep in Nevada's mountain ranges over the past ten years and in 1985, the Bureau began a "challenge grant" program to encourage cooperative Federal, State, and volunteer efforts to enhance desert bighorn sheep populations and habitat management on BLM administered lands.

This habitat management plan is part of a systematic approach to monitor, maintain and improve the quality and quantity of food, water, cover and living space for desert bighorn sheep. This plan was developed to integrate the habitat needs of desert bighorn sheep in the context of multiple use management and identify future land uses or actions that require implementation or monitoring. The purpose of this HMP is to document habitat suitability, set habitat management objectives, and describe the actions necessary to achieve those objectives for reestablishing or establishing desert bighorn sheep in the Last Chance Range, Specter Range and Bare Mountain.

This HMP has been developed under Sikes Act authority. The HMP was cooperatively developed under the Master Memorandum of Understanding (December 30, 1970) and the Sikes Act Supplement (October 7, 1975) between the NDOW and the BLM. The plan calls for NDOW and BLM to work in harmony to maintain, improve and manage the wildlife resources and their habitat for the best interest of the people of Nevada and the United States. It in no way diminishes the authority of the State of Nevada to own, control and manage the State's wildlife or the BLM's mandate to manage wildlife habitat on public lands.

The HMP areas were identified as potential bighorn sheep habitat in the Esmeralda-Southern Nye Resource Management Plan with recommendations to support the introduction or reintroduction of desert bighorn sheep in the areas identified in the plan.

B. Existing Environment

1. Location

a. Last Chance Range

The Last Chance Range is a series of desert mountains that run primarily in a north-south orientation (see Map II). The range is comprised of half a dozen precipitous mountains, some isolated and some connected by rugged undulating terrain. The east end of the range begins along

the west side of Pahrump, Nevada, and State Route 160 and ends on the west along the northeast corner of the Ash Meadows National Wildlife Refuge. The north boundary is Amargosa Flat and the south boundary near the Nevada/California stateline and Stewart Lake. The range covers approximately 12 miles east-west and 18 miles north-south. The HMP covers portions of the following areas:

T.17S., R.52E., Sections 34-36
T.18S., R.52E., Sections 1-3, 9-12, 13-26, 31-32, and 35-36
T.18S., R.53E., Section 31
T.19S., R.53E., Sections 5, 6, and 18
T.19S., R.52E., Sections 1-24, 29-34
T.20S., R.52E., Sections 2-5, 8-9, 16, and 21
T.17S., R.51E., Sections 29-33
T.17S., R.50E., Sections 25, 26, 35 and 36
T.18S., R.51E., Sections 2-7, 9-11, 13-16, 22-24, 25-26 and 35-36
T.19S., R.51E., Sections 1-2, 11-12 and 24

b. Specter Range

The Specter Range for purposes of this plan also covers the Striped and Skeleton Hills (see Map III). Approximately 1,770 acres of this range lies within the Nevada Test Site. Though in all likelihood, desert bighorn would also use

habitat on the Test Site, this acreage is not included within the HMP. The Specter Range begins on the west at Striped and Skeleton Hills which are located approximately three miles east of Lathrop Wells, Nevada and one half mile north and south of U.S. Highway 95 respectively. The Specter Range begins approximately two miles east of Striped Hills and consists of a series of north-south trending mountains. The Specter Range is bordered on the south by U.S. Highway 95 and on the north and east by the Nevada Test Site, managed under withdrawal by the Department of Energy (DOE). The HMP covers portions of the following areas:

T.16S., R.52E., Sections 1, 2, 3, 4, 9 and 12
T.16S., R.51E., Sections 1 and 2
T.15S., R.52E., Sections 5-8, 17-21 and 27-36
T.15S., R.51E., Sections 1, 2, 8-26, 35 and 36
T.15S., R.50E., Sections 9-13, 15, 26-28 and 33

c. Bare Mountain

Bare Mountain is a large solitary desert mountain located approximately two miles southeast of Beatty, Nevada, and is approximately ten miles long and five miles wide (see Map IV). The mountain is parallel to, and two and one half miles east of U.S. Highway 95. Bare Mountain is bordered on the north by Fluorspar Canyon and on the east by Crater

Flat. The HMP covers portions of the following areas:

T.12S., R.47E., Sections 13-36

T.12S., R.48E., Sections 17-20 and 29-32

T.13S., R.47E., Sections 1-3 and 11-13

T.13S., R.47½E., Sections 10, 11, 14, 15, 22-27 and 34-4

T.14S., R.47E., Sections 1 and 2

2. Acreage

The following acreages have been identified within each habitat management area (HMA) as having potential for desert bighorn sheep. The acreage not administered by the BLM is identified only as they relate to potential sheep use and is not part of the HMP. Management objectives and actions will not apply to non-Bureau lands unless specifically stated. The total acreage within the HMP is 76,740 acres. Other acreage, identified below, totals 2,300 acres and, though not part of the HMP, will probably be used by desert bighorn sheep in conjunction with habitat on public lands.

Acres of

Desert Bighorn Sheep

Habitat by HMA

	BLM Managed Lands (HMA)	Lands by Others (Not in HMP Area)	Total Sheep Habitat
Last Chance[1]	32,880	30	32,910
Secters [2]	23,460	1,770	25,230
Bare [1]	20,400	500	20,900
Total	76,740	2,300	79,040

[1] All non-HMP acreage is sheep habitat that lies within private land.

[2] All non-HMP acreage is sheep habitat that falls within the Nevada Test Site.

3. Topography and Elevation

The topography of the habitat management area is typical of much of the basin and range physiographic province. The habitat areas encompass north-south trending, linear, rugged mountain ranges that are separated by broad, gently-sloped valleys. Within the Last Chance HMA, the elevation varies from a low of 750 meters (2,460 feet) to a high of 1,304 meters (4,278 feet) at Mount Montgomery. The lowest elevation in the Specter Range is 850 meters (2,790 feet) to a high of 1,485 meters (4,872 feet). Bare Mountain has the highest elevation

with 1,838 meters (6,030 feet) and a low of 950 meters (3,117 feet). Slopes within bighorn habitat vary from five percent near the valley floors to one hundred percent in the steeper terrain, with most of the habitat containing slopes of forty to sixty percent.

4. Geology and Minerals

The geology of the area is comprised of three major rock units (as described in the Final Environmental Impact Statement, Nevada Test Site, September 1977). They include folded and faulted sedimentary rocks of the Paleozoic age, volcanic tuffs and lavas of the Tertiary age, and alluvium of late Tertiary and Quaternary age which are deposited in the valley floors due to erosion of nearby hills. The Paleozoic sedimentary rocks are generally many thousands of feet thick and are comprised of mainly carbonate rocks. The Tertiary age formations are generally less thick and are sometimes interspursed with Paleozoic rocks due to faulting and uplifting. Alluvial materials vary in depth with the greatest depths of 2,000 to 3,000 feet obtained in the central portions of the valleys.

5. Soils

The soils in the HMP area consist of primarily the Soil Orders Aridisols and Entisols. Entisols have only indistinct or lack

genetic horizons and are commonly found an alluvial fans and in drainage ways. They consist mainly of Torriorthents with loamy-skeletal or coarse-loamy textured control sections. Aridisols have distinct genetic horizons and arid soil moisture regimes. Among the Aridisols, the Orthids are more common than Argids. This soil order is found on moderately old, stable land surfaces.

The Nye County southwest soil survey No. 785 has been completed by the Soil Conservation Service (SCS) and the BLM. Although this survey has not been published, specific soil map unit descriptions (MUDs) are completed for all designated map units in the area and are available at the SCS and BLM, Stateline Resource Area office.

6. Climate

Precipitation varies significantly over short distances with pronounced variations from year to year. Annual precipitation depends mainly on elevation and localized storm tracks, and varies on the average from about four inches at 3,000 feet to about twelve inches at 6,000 feet. Two major precipitation periods occur; one in summer as localized and often intense thunderstorms and the other in winter as intermittent snow cover at the higher elevations and as showers at the lower elevations. Winter precipitation is usually more widespread and less intense than summer precipitation.

Temperatures vary significantly along elevational gradients with a decrease of approximately 5.3°F for every 1,000 foot increase in elevation. Typical temperatures on the nearby Nevada Test Site which are fairly indicative of the HMA are as follows:

	Average Summer Temperatures		Average Winter Temperatures	
Location	High	Low	High	Low
Frenchman Flat (Valley Floor)	97°F	62°F	53°F	26°F
Rainier Mesa (Mesa Top)	77°F	61°F	37°F	27°F

7. Vegetation

The HMA supports vegetation typical of the Great Basin and Mojave desert shrub biomes. The vegetation can be broken into five biotic communities: creosote - bursage, blackbrush, saltbush, desert riparian, and pinyon-juniper. These communities are described by Bradley, W.G. and J.E. Deacon (1965). The vegetation associated with each is briefly described below.

a. Creosote Bush Community

The creosote bush community is located on valley floors and the lower end of bajadas between 500 and 4,200 feet elevation.

Dominant shrubs in the creosote bush community are creosote bush (Larrea divaricata) and bur-sage (Ambrosia dumosa). Other shrubs include Mojave yucca (Yucca schidigera), range ratany (Krameria parvifolia), and brittle-bush (Encelia farinosa), cacti are quite common and include barrel cactus (Ferocactus acanthodes), beavertail cactus (Opuntia basilaris) and jumping cholla (Opuntia giglouii). A few of the common grasses include Indian rice grass (Oryzopsis hymenoides), six weeks fescue (Festuca octoflora), red brome (Bromus rubens), and big galleta (Hilaria rigida). Common forbs include paper flower (Psilostrophe cooperi), desert hyacinth (Brodiaea capata), desert trumpet (Eriogonum inflatum), and giant four-o'clock (Mirabilis froebelii).

b. Blackbrush Community

The blackbrush community is usually located on the upper end of the bajadas, between 4,200 to 6,000 feet elevation. The blackbrush community is dominated by a closely-spaced matrix of low growing blackbrush (Coleogyne ramosissima) interspersed with other shrubs. Joshua tree (Yucca brevifolia) is often associated with the blackbrush community. When Joshua tree is not present in the community it is often replaced with banana yucca (Yucca baccata).

Other commonly found shrubs include Mormon tea (Ephedra nevadensis), turpentine-broom (Thamnosma montana),

wolf-berry (Lycium spp.) and bud sagebrush (Artemesia spinescens). Commom grasses found in the community included red brome (Bromus rubens), cheatgrass brome (Bromus tectorum), Indian rice grass (Oryzopsis hymenoides), and big galleta (Hilaria rigida). A few of the common forbs include wild onion (Allium nevadensis sp.), mariposa lily (Calohortus flexuosus), brittle spine flower (Chorizanthe brevicornu), and wedge-leaved draba (Draba cuneifolia).

c. Saltbush Community

The saltbush community occurs as a mosaic within the creosote bush and blackbrush communities. Common shrubs within the saltbush community include shadscale (Atriplex confertifolia), four-winged saltbush (Atriplex canescens), hop sage (Grayia spinosa), and winter fat (Ceratoides lanata). A few of the common grasses include desert salt grass (Distichlis spicata), big galleta (Hilaria rigida). and fluffgrass (Tridens pulchellus). Forbs include iodine weed (Suaeda torreyana), yellow tansy mustard (Descurainia pinnata), desert mallow (Sphaeralcea ambigua), and spiny menodora (Menodora spinescens).

d. Desert Riparian Community

The desert riparian community occurs along intermittent washes from the lowest elevation (500 feet) of the Creosote

bush community to the mid elevations (5,100 feet) of the blackbrush community. This community often supports a higher diversity of flora than the surrounding upland vegetation but unlike the stream riparian community the visual contrast change in vegetation is more subtle. Local thundershowers provide the runoff necessary to maintain the subsurface water that supports the desert riparian vegetation.

Shrubs common to the desert riparian community include desert willow (Chilopsis linearis), desert almond (Prunus fesciculata), catclaw (Acacia greggii), cheese weed (Hymenoclea salsola), and bladder sage (Salazeria mexicana). Common grasses include six-weeks threeawn (Aristida adscensionis), sideoats grama(Bouteloua curtipendula), bush muhly (Muhlenbergia porteri), and sand dropseed (Sporobolus cryptandrus). Commonly found forbs include golden rod (Solidago spectabilis), sand verbena (Abronia spp.), night shade (Solanum triflorum), and plantago (Plantago insularis).

e. Pinyon-Juniper Community

The pinyon-juniper community occurs between the elevations of 6,000 feet to about 8000 feet.

Dominant tree species include pinyon pine (Pinus monophylla) and Utah juniper (Juniperus osteosperma). Yellow pine (Pinus ponderosa) can occasionally be found in small stands at the higher elevations. Common shrubs found in this community include big sagebrush (Artemesia tridentata), wild rose (Rosa woodsii), desert squaw bush (Rhus trilobata), Mohave desert buckbrush (Ceanothus greggii), mountain jointfir (Ephedra viridis), banana yucca (Yucca baccata), and cliffrose (Cowania mexicana). Common grasses include fringed brome (Bromus ciliatus), littleseed rice grass (Oryzopsis micrantha) and bottlebrush squirreltail (Sitanion hystrix). A few forbs include false solomon's seal (Smilacina stellata), desert sandwort (Arenaria macradenia), groundsel (Senecia moensis), and ground-cherry (Physalis hederaefolia)

During February and March of 1987, a total of twenty-one, one hundred point pace transects were initiated in the HMP area for the purpose of determining species composition. Twelve transects were conducted in the Last Chance Range and nine transects in the Specter Range. Most of the transects were

conducted on ridge tops or benches and a few in the valley bottoms. During the preliminary field investigation, Bare Mountain was considered to be very similar to the Specter Range, consequently transects were not ran on this mountain.

The Specter Range average plant composition for the ridge tops and benches is thirteen percent grasses, five percent forbs, and eighty-two percent shrubs. Valley bottoms had no grasses, few forbs, and almost entirely shrubs.

The Last Chance Range average plant composition for ridgetops and benches is three percent grasses, two percent forbs, and ninety-five percent shrubs. Valley bottoms had no grasses, few forbs, and almost entirely shrubs.

Though an ecological site inventory has not been completed for Southern Nye County, appropriate inventory data from Clark County is included below to provide a rough idea of potential forage production. The production data presented is based upon an average year. Because desert bighorn sheep are, to a large degree, opportunistic feeders, the observed forage production as given is expected to be considerably lower than what is actually available. In addition, based upon the investigator's observations, the total herbage production figures are probably lower than actually occurs, particularly in the steeper terrain.

Ecological Sites Descriptions

Sonoran Basin and Range

MLRA 30

(1983)

Ecological Site	No.	Elevation (In Feet)	Precipitation (In Inches)	Average Annual Air Dry (In Lbs/Ac.)	Desirable Forage Average Annual Production (In Lbs/Ac.)
Sandy Upland	30-41	3300-6200	8-12	500	134-284
Limy Upland	30-09	3300-6200	8-12	300	52-145
Granitic Upland	30-13	3300-6200	8-12	300	39-108
Blackbrush Slope	30-14	3300-6200	8-12	250	43-93
Wash	30-28	1000-5400	3-12	400	28-100
Breaks	30-49	1000-6200	3-12	100	26

8. Animals

None of the three HMAs currently have desert bighorn sheep populations. However, NDOW and BLM have recognized the Last Chance Range as historic habitat. Bare Mountain and the Specter Range were identified as potential range. In December 1986, fresh droppings indicating the presence of desert bighorn were found in the Specter Range by NDOW and BLM biologists. Desert bighorn were known to occur in the northern Spring Mountains historically, and considering the proximity of this range to the Specter Range (less than one half mile away), there may perhaps have been some historic use in the Specter Range also.

Mule deer are also absent in the three HMAs except for a small resident population on Bare Mountain.

Common wildlife species that inhabit the HMAs include bobcat, gray fox, kit fox, coyote, spotted skunk, striped skunk, badger, ring-tailed cat, black-tailed jack rabbit, desert cottontail, kangaroo rat, pack rat, antelope ground squirrel, Gambel's quail, mourning dove, prairie falcon, red-tailed hawk, golden eagle, American kestrel, great-horned owl, burrowing owl, desert tortoise, Great Basin rattlesnake, speckled rattlesnake, Mojave green rattlesnake, gopher snake, red coachwhip, chuckwalla, and numerous other reptilian species.

The desert tortoise occurs on bajadas and in alluvial valleys adjacent to the mountains below 4,500 feet elevations. Populations are relatively low in the HMA as indicated by past inventories and the Last Chance Study Plot which estimated ten to fifteen tortoises per square mile.

9. Threatened, Endangered and Sensitive Species

a. Flora

Though there are no Federally listed threatened or endangered plants within the HMA, one endangered species (Nitrophila mohavensis) and six threatened species

(Astragalus phoenix, Centaurium namophilum, Enceliopsis nudicaulis var. corrugata, Grindelia fraxino - pratensis, Ivesia eremica, and Mentzelia leucophylla) occur in the Ash Meadows area which is adjacent to part of the Last Chance HMA. Centaurium namophilum occurs at Point of Rocks Springs, which will undoubtedly be used by desert bighorn because the spring is adjacent to excellent sheep habitat. The BLM will coordinate with the U.S. Fish and Wildlife Service to insure that the Point of Rocks Springs remain available for future bighorn use. Section 7 consultation will be required prior to the reintroduction of desert bighorn sheep to insure that future bighorn populations will have no effect on this plant species or its habitat. Other T&E plant species are located far enough from bighorn sheep habitat to have little chance of being impacted.

The following table lists those Federal and State candidate and sensitive species that occur within the habitat management areas.

Species Name	Location	Status*
Brickellia knappiana	Bare Mountain	3C
Gilia ripleyi	Bare Mountain, Specter Range	3C
Penstemon fruticiformis spp. amargosae	Specter Range	2
Perityle megalocephala var. intricata	Bare Mountain, Last Chance	3C

Species Name	Location	Status*
Phacelia parishii	Specter Range	3C
Polygala subspinosa var. heterorhynca	Specter Range	3C
Salvia funerea	Last Chance	3C

*Category 2 candidate species are those which information now in possession of the U.S. Fish and Wildlife Service indicate that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threats are not currently known or on file to support the immediate preparation of rules. Category 3C candidate species are those proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

Though it is not anticipated that bighorn sheep would impact the above species, the U.S. Fish and Wildlife Service will be requested to provide a biological opinion.

b. Fauna

There are no known threatened or endangered animal species within the habitat management areas. However, the Warm Springs pupfish (Cyprinodon nevadensis var. pectoralis) and Ash Meadows naucorid beetle (Ambrysus amargosus), endangered and threatened respectively, occur at Point of Rocks Springs. As in the case with T&E plants, these species will also be included in Section 7 consultation. Other endangered species that occur in the Ash Meadows area though outside the HMA include the Ash Meadows Speckled dace (Rhinichthys osculus nevadensis), Ash Meadows Amargosa pupfish (Cyprinodon nevadensis mionectes), and Devil's Hole

pupfish (Cyprinodon diabolis). The peregrine falcon may also occasionally occur in the HMAs, though there has been no documentation of such an occurrence to date.

Federally listed candidate species that may occur in the HMA are listed below:

Common Name	Scientific Name	Status	Location
Desert tortoise	Scaptochelys agassigii	2	On bajades and valley floors below 4,500 feet
Gila monster	Heloderma suspectum	2	Occurrence unknown, but may occur
Spotted bat	Euderma maculatum	2	Not documented, but may occur

The desert bighorn sheep is classified as a "sensitive species" in Nevada. According to BLM Manual 6840.31, the fundamental objective for sensitive species is to "maintain or increase current population levels of sensitive animals through early habitat protection or enhancement".

10. Livestock

There are only three livestock (cattle) grazing allotments within the HMA; two are on that portion of the Bare Mountain HMA administered by the Battle Mountain District and one on a small portion of the Last Chance HMA. The following table provides a comparison of livestock use within the respective HMAs.

HMA	No. of Acres in HMA	Grazing Allotment	Allotted Grazing Area within HMA Acres	Percent*
Last Chance Range	32,880	Mt. Stirling	1,840	6
Specter Range	23,460	None	0	0
Bare Mountain	20,400	Razorback	3,835	19
		Montezuma	8,585	42

* Based on the percentage of the HMA that is alloted. Only six percent of the Last Chance HMA is grazed by livestock.

This is primarily around the Congress Mine near Mt. Montgomery. The same area is also used by wild burros. The 1,840 acres of the Mt. Stirling Allotment that occurs within the HMA is in marginal desert bighorn sheep habitat and consequently use of the allotment will have no significant impact on HMP objectives. The following table compares the percent of each allotment that lies within an HMA.

Allotment Name	Total Acres in Allotment	Acres of the Allotment within the HMA	Percentage of Allotment in the HMA
Mt. Stirling	153,262	1,840	1
Razorback	72,,880	3,835	5
Montezuma	538,297	8,585	2

Of the 12,420 acres open to livestock grazing in the north one - half of Bare Mountain, approximately 4,755 acres are inaccessible to livestock. This leaves only about 7,665 acres of the total 20,400 acres of potential bighorn habitat that will actually be used by livestock. However, of the 7,665 acres, 5,900 acres along the lower slopes of the north end and in and around the Species Spring and Tarantula Canyon areas receives both livestock and wild horse and burro use. This has resulted in the 5,900 acres being identified in the HMP as a potential conflict area.

As the data in the above table indicates, a very small percentage of any one of the three grazing allotments occurs within the HMA. The only potential conflict between livestock and future desert bighorn sheep populations is the availability of water at the source of Species Spring in Bare Mountain and some overlap of expected use areas in the same HMA. The decisions in the Esmeralda-Southern Nye RMP to classify the Montezuma Allotment as an "I" allotment with the subsequent implementation of an intensive grazing management plan could reduce potential conflicts by improving distribution of livestock and building in rest.

11. Wild Horse and Burros

Wild horse and burro use presently occurs only on Bare Mountain and in the Last Chance Range. The primary factor affecting current distribution of wild horses and burros is the availability of water. Because the Specter Range has no surface water, the range has no wild horse and burro use. Burro use in the Last Chance Range is restricted to the Mt. Montgomery area where water is available in association with Congress Mine, and

springs in the northern Spring Mountains across State Highway 160. Wild horse and burro use also occurs primarily along the north one half of Bare Mountain with some burro use extending along the periphery of the entire Bare Mountain.

The Esmeralda-Southern Nye RMP identified two herd management areas that would in part overlap with the habitat management areas. First is the Last Chance Herd Management Area which is bounded on the north by U.S. Highway 95, just opposite of the Specter Range, and runs almost due south between the Last Chance Range and the town of Pahrump, Nevada. Only about 3,000 acres in the Mt. Montgomery area of the HMA would be affected by this herd management area. The second is the Bullfrog Herd

Management Area which overlaps most of that portion of Bare Mountain that lies within the BLM Battle Mountain District. This however, is only about one-fourth of the entire herd area. This herd management area includes approximately 12,000 acres of potential desert bighorn sheep habitat identified in this plan. Approximately 5,900 acres have been identified in the Bare Mountain HMA as a potential conflict area between wild horses and burros, and desert bighorn sheep. Because there are no waters in the higher elevations, wild horse and burro use in the area is fairly restricted to the lower elevations. Therefore, the higher quality bighorn habitat receives little to no use by wild horses and burros.

Population figures for the two herd management areas, as determined by 1982 surveys, show that there are approximately 12 horses and 218 burros in the Bullfrog Herd Management Area and 12 burros in the Last Chance Herd Management Area. Current populations are unknown but are expected to be much higher.

12. Water Availability

Water resources are extremely rare in the HMA. The Specter HMA has absolutely no surface water except for occasional water pockets that collect and hold water for a few days after intensive rainstorms. The only water in the Last Chance HMA which is potentially available to desert bighorn is the Point of Rocks Springs which outflows at the edge of good escape cover. Devil's Hole is also located adjacent to good escape cover but the water is in a cave about fifty feet below the surface and consequently unavailable - even if the existing fences were removed. Other springs are simply too far from adequate escape cover to be of any benefit. Water located in association with Congress Mine is in marginal habitat and is extensively used by wild burros. The only water known to occur in the Bare Mountain Habitat Management Area is Species Spring. The concentration of livestock and subsequent poor water quality reduces the quality of this spring for bighorn use. However, by working with the livestock permittee, this spring has excellent potential to serve multiple-use objectives.

Because of limited waters in the HMA, those few springs that have potential to support desert bighorn are critical.

13. Wilderness

There are no designated wilderness areas or wilderness study areas within the HMA.

II. LAND USE PLAN OBJECTIVES AND DECISIONS

The Esmeralda-Southern Nye Resource Management Plan encompasses portions of two BLM districts; Las Vegas and Battle Mountain. The RMP Record of Decision was divided into two parts: Planning Area A, which covers 2,689,230 acres within the Tonopah Resource Area, Battle Mountain District, and Planning Area B, which covers 735,547 acres within the Stateline Resource Area, Las Vegas District. The RMP planning process began in 1983 and culminated with the Record of Decision Parts A and B in October 1986. The RMP serves as a land use plan that provides overall guidance and direction in public land resource management. The RMP may be reviewed in the Las Vegas District or Battle Mountain District Offices.

Listed below are RMP objectives and decisions from which this HMP is derived.

A. Plan A - Battle Mountain District

1. Wildlife

a. Objectives

(1) Improve the condition of public rangelands to enhance the productivity for all rangeland values.

(2) Initially manage wildlife habitat for existing numbers of big game while recognizing reasonable numbers of wildlife as management goal.

(3) Maintain or improve selected riparian and stream habitat to good or better condition.

b. Management Decisions

(1) Manage current wildlife habitat initially for current wildlife numbers with a goal of achieving reasonable number of wildlife in both current and historical habitat. The Bare Mountain HMA was identified as the fourth highest priority for development of an HMP in Planning Area A.

(2) Continue with existing rangeland monitoring studies and establish new studies as recommended by the Nevada Rangeland Monitoring Handbook to determine if management objectives are being reached and what

adjustments, if any, in wildlife reasonable numbers are necessary.

(3) Support the introduction of bighorn sheep into suitable habitat in the Bare Mountain area.

(4) Construct small catchments in support of the Bare Mountain HMP.

2. Livestock Grazing

a. Objectives

(1) Improve the condition of public rangelands to enhance the productivity for all rangeland values.

(2) Initially authorize livestock use at existing levels.

(3) Maintain or improve selected riparian and stream habitat to good or better condition.

b. Management Decisions

(1) Authorize livestock use up to active grazing preference. However, it is anticipated not to exceed the three to five year average of 45,555 AUM's.

(2) Continue the existing rangeland monitoring studies, and establish new studies as necessary, as recommended by the Nevada Rangeland Monitoring Handbook, to determine if management objectives are being reached and what adjustments in livestock use, if any, are necessary.

(3) Implement an intensive grazing management plan on the Montezuma Allotment and implement range improvements on Razorbact Allotment. These allotments were listed as fourth and seventh priority respectively.

3. Wild Horse and Burro

a. Objectives

(1) To improve the condition of public rangelands to enhance the productivity for all rangeland values.

(2) Initially, manage wild horses and burros at current numbers and maintain their habitat in areas which constituted their habitat at the time the Wild and Free Roaming Horse and Burro Act became law in 1971.

(3) To maintain or improve selected riparian and stream habitat to good or better condition.

b. Management Decisions

(1) Initially manage wild horse and burro populations at current numbers based on the 1982 survey which identified a level of 12 horses and 218 burros in the Bullfrog Herd Management Area.

(2) Develop and implement a herd management plan for the Bullfrog Herd Management Area, which has been identified as third priority in Planning Area A.

B. Plan B - Las Vegas District

1. Wildlife

a. Objectives

(1) Improve the condition of public rangelands to enhance the productivity for all rangeland values.

(2) Initially, manage wildlife habitat for existing numbers of big game while recognizing reasonable numbers of wildlife as management goal.

(3) Maintain or improve selected riparian and stream habitat to good or better condition.

b. Management Decisions

(1) Manage current wildlife habitat initially for current numbers, with a goal of achieving reasonable numbers in both current and historical habitat. Habitat management plans will be developed for the Last Chance (Johnnie) and Specter Ranges. These HMPs were identified as third and fourth priorities in Planning Area B.

(2) Support introduction of bighorn sheep into suitable habitat in the Bare Mountain Habitat Area.

(3) Support introduction of desert bighorn sheep into historical and suitable habitat in the Johnnie (Last Chance) and Specter Habitat Areas respectively, pending further study.

(4) Establish new monitoring studies as recommended by the Nevada Rangeland Monitoring Handbook. The studies will be used to determine if objectives are being reached and what adjustments, if any, in wildlife reasonable numbers may be necessary.

2. Livestock Grazing

a. Objectives

(1) Improve the condition of public rangelands to enhance the productivity for all rangeland values.

(2) Initially, authorize livestock use at existing levels.

b. Management Decisions

(1) Authorize livestock use up to active preference in the Mt. Stirling Allotment. However, it is anticipated not to exceed the three to five year average of 569 AUMs.

(2) Intensively manage the Mt. Stirling Allotment, as a Category "I" allotment. Develop an AMP for this allotment.

(3) Establish new monitoring studies, as recommended by the Nevada Rangeland Monitoring Handbook, to determine if management objectives are being reached and what adjustments in livestock use, if any, are necessary.

3. Wild Horse and Burros

a. Objectives

(1) To improve the condition of public rangelands to enhance the productivity for all rangeland values.

(2) Initially, manage wild horses and burros at current numbers and maintain their habitat in areas which constituted their habitat at the time the Wild and Free Roaming Horse and Burro Act became law in 1971.

b. Management Decisions

(1) Manage wild horses and burros at current numbers based on the 1982 survey which identified a level of 12 wild burros in the Last Chance Herd Management Area. (The Last Chance and Mt. Stirling herd management areas were combined into one herd management plan called the Spring Mountains Herd Management Area Plan.)

(2) Establish new rangeland monitoring studies in these herd management areas, as recommended by the Nevada Rangeland Monitoring Handbook, to determine if management objectives are being reached and what adjustments in wild horse and burro numbers are necessary.

III. HABITAT EVALUATION

A. Procedures and Considerations

The habitat evaluation methods and procedures used in this plan for the evaluation of potential bighorn sheep habitat is a modification of Charles Hansen's (M.S.) original classification of desert bighorn habitat potential as modified by the Nevada Department of Wildlife in a manuscript authored by Howard Golden and George Tsukamoto entitled "Potential Bighorn Sheep Habitat in Northern Nevada" (1980). This system of rating desert bighorn sheep habitat uses a series of components ascribing number values to each. The sum of these values have a direct relationship to the number of sheep that may potentially inhabit an area. Some of these components or factors are very obvious, such as, food and water. More subtle factors that influence the presence of sheep are space, human activity, and domestic and feral animal use of the land. This land evaluation method also points out local limiting factors which in certain

instances show "what" and "where" management of the habitat or human activities will benefit bighorn sheep. For instance, if a parcel of land is valued low for bighorn sheep, the reason for the low value can be quickly ascertained by analyzing the individual points that contribute to the total score of that parcel of land. If the basic topography is present for optimum bighorn sheep habitat but water is absent, the land manager can plan a water development to make the

area more suitable for bighorn sheep. The following five habitat components were examined for each site within each range and assigned a point value.

1. Topography - Roughness of terrain and general aspect of the range in relation to elevational gradient (5 points).

2. Water Availability - Distribution of water sources, amount and permanence of water, topographic location of sources, and other animal use of sources (20 points).

3. Vegetation - General vegetation type, percentages of preferred forage, and overall vegetative quality. (15 points)

4. Animal Use - Considers domestic/wild horse and burro utilization and distribution, and other big game (i.e. deer) use and distribution as it may effect bighorn use. (8 points)

5. Human Use - Considers the extent of roads, fences, mineral, and agricultural development (10 points).

Following field investigations, all of the habitat components and subcomponents were totaled for all sites that were examined. These totals were then "weighted" by multiplying each total by four and then averaged for a weighted average total. These final weighted average totals were used as a basis for comparison of habitat quality among ranges. (See Appendix B for specific point value

analysis for each HMA). A break-down of habitat quality by weighted average points is given below:

Excellent = 180+ points
Good = 160-179 points
Fair-Good = 130-159 points
Fair = 111-129 points
Poor-Fair = 81-110 points
Poor 80 points

The areas which were thought to have some potential for desert bighorn sheep were outlined on 1:100,000 scale maps. The potential habitat was calculated by planimetering the areas from the prepared maps.

The potential population of sheep that could result from an introduction was estimated for each mountain range. The expected sheep density estimates per square mile of habitat were developed from data gathered by McQuivey (1978) and Jones (1950). By multiplying the approximate square miles of sheep habitat within the 160+ weighted value areas times the expected density value, an approximation of the expected potential sheep populations was determined. In cases where the habitat quality is of a lower value rating but the area is strategically located near or between higher value habitat, the area was included for estimating population potential. In areas where the habitat received competing uses (i.e, mining, livestock grazing, wild horse and burro use) a population

estimate was either dropped or reduced, depending upon the particular circumstances of that area. No population estimates were made for non-Bureau managed lands, though such lands located in high value habitat would probably be used by bighorn.

B. Summary of Habitat Evaluation

1. Last Chance Habitat Management Area

Approximately 78 square miles of potential bighorn sheep habitat was investigated with about 51 square miles or 65 percent of the area containing fair to good habitat. The 65 percent (32,880 acres) fair to good habitat was rated at an overall average of

156 weighted points. Though some areas rated higher, the distance from available water for large parts of the area depressed the overall value of the habitat. Nine separate sites were evaluated with a range of 144 to 172 points.

The topography varies from rolling hills without canyons or draws and more than a mile from steep and rocky terrain to steep and rocky terrain broken frequently by canyons or draws. Survey sites 2, 3, 4, 6, 8 and 9 contain the best topographical features with respect to the needs of bighorn. The habitat area is comprised of distinct groups of mountains separated by valleys and roads. Although this is not expected to present a problem, it is mentioned because the valleys and roads provide

access to most portions of the range. However, the overall topography of the area is considered to be adequate for bighorn sheep.

The distribution of water sources among the nine sites surveyed is poor. All known water sources are located in the northwestern tip of the range around Devil's Hole. This portion of the range in which the waters are located is separated from the rest of the range by a valley that is approximately one-half mile wide and contains a road. Although this portion of the range is adequately watered, it contains only two square miles of suitable habitat. Of the six water sources listed in the table below, only Point of Rocks Springs is close enough to bighorn habitat to be potentially available to bighorn sheep.

Water Source	Known Status	Location	Section
Point of Rocks Springs	Always Present - Open Flow	T.18S., R.51E., NE¼ SE¼	9
Unnamed Spring	Privately Owned Water Source	T.17S., R.50E., SW¼ NE¼	35
Five Springs Area	Always Present - Open Seep ½ to ¾ Mile from Escape Terrain	T.17S., R.50E., SW¼ NW¼	23
School Spring	Always Present - Fenced for Pupfish - Too far from escape cover.	T.17S., R.50E., SE¼ SE¼	36
Devils Hole	Always Present - Fenced for Pupfish - Too far from escape cover.	T.17S., R.50E., SW¼ SE¼	36

The addition of nine water developments within the habitat area would add 24 weighted points to the evaluation and change the status of the habitat from fair-to-good to good-to-excellent in seven of the nine survey sites. Survey sites 1 and 7 would remain the same with 156 and 144 points respectively.

Though the vegetative communities contain an adequate mixture of grasses, forbs, and shrubs, the ecological potential for desirable species composition and forage production is generally low in the lower elevations. The higher elevations and steeper slopes tend to have better forage available.

The only domestic livestock use occurs in the north end of site 7 which is in the Mt. Stirling Allotment and only overlaps 1,840 acres of potential bighorn habitat. There is no other authorized livestock use within the HMA. Wild horse and burro use also occurs in and around site 7 and overlaps roughly 4,000 acres of the northeast one half of this site. There were some indications that light burro use may also occur in sites 8 and 9. However, the lack of available water has resulted in very limited use. There is also evidence that some wild horse use may be occurring in and around sites 1, 2, and 4. This use is apparently the result of wild horses moving into the Ash Meadows area from California after the removal of wild horses from the area in 1985.

Human activity in the Last Chance HMA varied from light to moderate in and around private lands which border the eastern and northwestern sides of the range. The private land on the east side borders the town of Pahrump and has the most activity. Current human activity is mostly restricted to the lower elevations and more accessible habitat areas and is not expected to be a problem.

Based upon existing and potential (i.e., with water developments) habitat quantity and quality, the 26,060 acres of good to excellent habitat is expected to be sufficient to support a minimum of 143 desert bighorn sheep yearlong. The

6,820 acres identified in site 7 was not included in the carrying capacity estimates for several reasons: (1) at least part of site 7 will be managed for wild burros, (2) portions of the site lie within the Mt. Stirling allotment, (3) the habitat is of a relatively lower value than the rest of the HMA, and (4) most of the site is more than four miles from good escape cover. However, site 7 may eventually be used as a migration corridor by bighorn for movement to and from the Spring Mountain Range. Therefore, the habitat should be managed to include present uses and their respective use areas and to insure that the habitat will be available as a bighorn migration corridor. The estimated potential population of 143 desert bighorn is believed to be well within the carrying capacity of the habitat based upon food, water (with water developments), cover and

space requirements. Desert bighorn require 4 lbs. of good quality dry weight forage per day. Forage requirements for the 143 desert bighorn based upon the 26,060 acres of good to excellent habitat is estimated at 8 lbs. of forage per acre per year. However, based upon typical bighorn distribution and use patterns as determined by NDOW from existing bighorn sheep ranges, distribution of bighorn is expected to be as follows: virtually all the bighorn will key in on available waters during the dry summer period (4 months). Once water developments are fully in place, approximately 15,550 acres will be available for summer use. The bighorn will scatter throughout their range during the remainder of the year.

Forage requirements for bighorn sheep per the projected distribution and use patterns is given below:

143 bighorn in 15,550 acres of summer habitat for four months = a forage requirement of 4.5 lbs. of forage per acre per year (143 x 122 lbs. of forage per month x 4 months divided by 15,500 acres = 4.5 lbs. per acre per year).

143 bighorn distributed throughout their total habitat area for 8 months = a forage requirement of 5.4 lbs. of forage per acre per year (143 x 122 lbs. of

forage per month x 8 months divided by
26,060 acres = 5.4 lbs. per acre per year).

Based upon the above calculations, bighorn will require 9.9 lbs. of forage (4.5 lbs. for summer plus 5.4 lbs. the rest of the year) per acre per year in summer (watered) habitat and 5.4 lbs. of forage per acre per year in the remaining habitat. This is believed to be well within the forage production capacity of the range as identified even under the least productive ecological site. In addition, the acreage computations are based upon aerial mapping and do not take into consideration actual surface acres that occurs in steep rugged terrain.

2. Specter Habitat Management Area

A total of 26,030 acres of potential bighorn sheep habitat exists in the Specter HMA. This is comprised of the Specter Range (23,480 acres), Striped Hills (1,750 acres), and Skeleton Hills (800 acres). Portions of the Specter Range (1,565 acres) and Striped Hills (205 acres) extend into the Nevada Test Site which is managed under withdrawal by the Department of Energy (DOE).

All of the bighorn habitat fell into the range of 112 to 132 weighted habitat points with an overall average score of 129.6 points. This is equivalent to the fair - good habitat quality.

Topography ranges from rolling hills to steep rugged terrain. Overall, topographic characteristics (i.e., rugged terrain with steep slopes) in the Specter Range are good to excellent in their potential as escape cover (4 to 5 out of 5 possible points).

Forage resource values generally scored in the moderate range which indicate that overall forage quality is sufficient to meet desert bighorn needs. The lack of other ungulates including deer, domestic livestock, and wild burros insures that there would be no conflicts for forage resources. In fact, the habitat was rated at the full point values for the animal and human use categories.

The installation of six water developments in stratigicaly located areas to maximize the juxtaposition of such habitat parameters as water, escape cover, forage and potential lambing areas would drastically improve the overall habitat quality of the Specter Range. And would change the overall average point value from 129.6 to 192.5 for the HMA. This is well above the minimum 180 point score that signifies excellent habitat.

Human use in the Specter Range is extremely light. There is no mining activity or livestock use in this range. The DOE discourages public use in this range for security reasons due to its proximity to the Test Site. This may create a problem in the future if the public demands access to the area for consumptive and non-comsumptive recreation use.

With the installation of water developments, the Specter Range has the potential to support a minimum of 129 (116-142) desert bighorn yearlong. This is well within the carrying capacity of the range to provide ample forage, cover and space.

Projected forage requirements for desert bighorn are given below. DOE administered lands and the Skeleton Hills are not included in the potential carrying capacity even though bighorn sheep will undoubtedly use available habitat on the Test Site. The Skeleton Hills are isolated south of U.S. Highway 95 and consequently there is little potential for bighorn use of this

mountain in the foreseeable future. The projected distribution and use patterns as given in the forage requirement figures below are based upon typical sheep use patterns in other populated ranges as determined by NDOW and upon the juxtaposition of proposed waters and other habitat parameters.

129 bighorn in 6,490 acres of summer habitat for 4 months = a forage requirement of 9.7 lbs. per acre per year (129 x 122 lbs. of forage per month x 4 months divided by 6,490 acres = 9.7 lbs. per acre per year).

129 bighorn distributed throughout their total habitat area for 8 months = a forage requirement of 5.4 lbs. per acre per year (129 x 122 lbs. of

forage per month x 8 months divided by 23,460 acres = 5.4 lbs. per acre per year).

Based upon the above calculations and projections, bighorn will require approximately 15.1 lbs. of forage per acre per year in summer (watered) habitat and 5.4 lbs. per acre per year in the remainder of the habitat. As with the Last Chance HMA, this is believed to be well within the forage production capacity of the habitat.

3. Bare Mountain Range Habitat Management Area

Unlike the other habitat areas, Bare Mountain is one continuous mountain that is dissected by numerous canyons, peaks, and draws. There is a total of 20,900 acres of potential bighorn sheep habitat (however, 500 acres of this is patented). The vegetative communities and forage values for Bare Mountain are very similar to the Specter Range. However, livestock grazing and wild horse and burro use occurs here. In addition, Bare Mountain lies within two BLM districts (Las Vegas and Battle Mountain). Potential desert bighorn sheep habitat north of Flourspar Canyon was initially examined but though the habitat was rated as fair (124 points), was dropped from further consideration due to the high degree of potential conflict with human use and other multiple uses.

Escape cover (based upon topographic features) was rated as excellent with a weighted average score of 4.5 out of five possible points. Water availability was rated poor as related to distribution and competition, excellent as to amount and permanancy, and fair as to accessibility. Only one spring (Species Spring) exists in the entire mountain range and it is used heavily by both livestock and burros. The major limiting factor that limits potential bighorn populations on Bare Mountain is the lack of adequate water distribution.

Mining operations along the north and east sides of the mountain reduce the quality of the habitat along the periphery of potential sheep use areas. However, these are generally along the lower elevation zones and are limited in scope. At present levels, existing mining operations have little effect on the overall potential of the habitat to support sustainable populations of bighorn. An acceleration of mining activity in the future may have a greater impact, depending upon the size, number and location of surface activities.

The Montezuma and Razorback grazing allotments incorporate 8,585 and 3,835 acres, respectively, of the habitat area. However, the habitat area only comprises two percent and five percent of the respective allotments. Of the 12,420 acres of bighorn habitat that lie within the two allotments, approximately 5,000 acres are inaccessible to livestock and consequently solely available to bighorn sheep. Livestock grazing is authorized

only on that portion of Bare Mountain that is under the management of the Battle Mountain District. The biggest concern regarding livestock and desert bighorn at this time is the availability of Species Spring.

The extent of wild horse and burro use in Bare Mountain is unknown at this time. The Bull Frog Herd Management Area Plan, once written, will cover wild horse and burro management in the area. The land use plan only identifies that portion of Bare Mountain under the Battle Mountain District and a small section along U.S. Highway 95 as a herd management area. As long as wild horses and burros are managed at recommended numbers and do not expand outside the management area, conflicts between them and desert bighorn should be insignificant. However, there is evidence that burro use may extend along the periphery of the entire mountain. If this is the case, appropriate actions should be taken (i.e., fencing) to restrict burros to those areas identified as burro management areas in the Esmeralda-Southern Nye RMP.

The overall habitat rating for Bare Mountain is 165.7 points which is at the lower end of the good habitat category. The installation of four water developments would increase the habitat quality by 25.7 points for a total of 191.4 points which is in the excellent habitat category. The location of waters in the higher elevations and in inaccessible areas to livestock and burros would tend to concentrate bighorn use to those areas

where no forage competition would occur - at least during the summer months. The expected carrying capacity of the habitat area is estimated at a minimum of 95 (86 - 105) bighorn yearlong.

Projected forage requirements for 95 desert bighorn are given below. Five hundred acres of patented lands are not included in he calculations even though some bighorn use may occur on them. Because of the configuration of the mountain, the high percentage of excellent habitat, and the proximity of the four proposed water developments to large portions of the habitat, there will not be a large degree of movement between different areas within the habitat area. However, some movement is expected as is some use of those areas used by livestock and burros at the lower elevations , such as Tarantula Canyon and Species Spring.

95 bighorn in 6,350 acres of summer habitat for 4 months = a forage requirement of 7.3 lbs. per acre per year (95 x 122 lbs. of forage per month x 4 months divided by 6,350 acres = 7.3 lbs. per acre per year).

79 bighorn distributed throughout their habitat (except where grazed by livestock) for 8 months = a forage requirement of 5.3 lbs. per acre per year (79 x 122 lbs. of forage per month x 8 months divided by 14,500 acres = 5.3 lbs. per acre per year).

Approximately 16 bighorn will probably use lower elevation areas (grazed areas) for approximately 8 months. Forage requirement would be approximately 2.6 lbs. per acre per year.

Based upon the above calculations and projections, bighorn will require approximately 12.6 lbs. of forage per acre per year in summer habitat and 5.3 lbs. per acre per year in most of the rest of the habitat (8,150 acres) with an additional forage requirement of approximately 2.6 lbs. per acre per year in the lower elevations near Fluorspar and Tarantula Canyons. As with the other habitat areas, the expected forage requirements are believed to be well within the forage production capacity of the habitat.

IV. MANAGEMENT OBJECTIVES AND PLANNED ACTIONS

The NDOW and BLM cooperatively developed management objectives for the Southern Nye Desert Bighorn HMP. These objectives were formulated from various planning documents, policy and guidance, and environmental legislation. The Southern Nye RMP and "Desert Bighorn Sheep Habitat Status and Cooperative Action Plan in the Las Vegas District" were the documents most often used. Objectives were further refined during the habitat analysis phase of the HMP process. The planned actions were developed as facilitators necessary to achieve the objectives.

A. Last Chance (Johnnie) Habitat Management Area

1. Background

Of the 49,920 acres investigated as potential desert bighorn sheep habitat, 26,060 acres were identified as having good potential to support a viable population of desert bighorn. Within the 26,060 acres, 15,550 acres were evaluated as having excellent habitat features (i.e., escape cover, forage availability, potential lambing grounds, etc.) and another 10,510 acres as having good habitat features. 6,820 acres is more marginal due to distance from precipitous terrain and potential conflicts with wild horses and burros and to a lesser degree, livestock. This area lies in the Mt. Montgomery/ Congress Mine area near Highway 16, northwest of Pahrump, Nevada. The only livestock grazing in potential desert bighorn sheep habitat is the Mt. Stirling Allotment which incorporates approximately 2,500 acres of the above identified 6,820 acres of fair habitat. Current burro use is restricted to the northeast one half of the same 6,820 acres. The primary limiting factor for reestablishing desert bighorn to the Last Chance HMA is the lack of available water. Only the Point of Rocks Springs (now part of the Ash Meadows National Wildlife Refuge) is available to future bighorn populations. Current livestock and wild horse and burro distribution will have no effect on the reestablishment of desert bighorn. However, an increase in distribution of burros and horses could present future

conflicts. The lack of waters in the Last Chance Range has held burro use to its existing distribution.

2. Objectives and Planned Actions

a. Objective LC1

Reestablish and manage for approximately 143 (129-157) desert bighorn sheep in the Last Chance HMA by the year 2004.

b. Planned Actions

LC1-1

The NDOW will reintroduce desert bighorn to the Last Chance HMA by 1990 and will make augmentation releases as necessary.

LC1-2

The BLM, NDOW, and Fraternity of the Desert Bighorn (FDB) will cooperatively develop appropriate waters necessary to meet the above objective.

At this time, the following water developments are anticipated:

Catchment Name*	Approximate Location
Last Chance No. 1	T.18S., R.51E., Section 4, NW
Last Chance No. 2	T.18S., R.51E., Section 9, S½
Last Chance No. 3	T.18S., R.51E., Section 10, Center
Unnamed	T.18S., R.51E., Section 25
Unnamed	T.19S., R.52E., Section 6
Unnamed	T.18S., R.52E., Section 36
Unnamed	T.19S., R.52E., Section 1
Unnamed	T.19S., R.52E., Section 11
High Peak	T.19S., R.52E., Section 32

* The Last Chance water developments are required prior to reintroductions.

LC1-3

Work with the U.S. Fish and Wildlife Service (USFWS) to insure that Point of Rocks Springs will remain available to desert bighorn.

LC1-4

NDOW will conduct appropriate monitoring studies to determine population size, structure and distribution to evaluate whether the above objective is being met. (See LC1-M1)

c. Objective LC2

Maintain and where necessary improve desert bighorn sheep habitat and forage conditions.

d. Planned Actions

LC2-1

The BLM will conduct appropriate habitat monitoring studies to insure that use levels are consistent with maintaining existing forage condition. The extent and frequency of habitat monitoring studies will be based upon bighorn concentration areas and use patterns as determined by NDOW population monitoring studies. (See LC2-M1; LC2-M2; and LC2-M3)

LC2-2

Where possible, do no exceed recommended wild horse and burro numbers in the Last Chance Herd Management area as identified in the Spring Mountain HMAP.

LC2-3

Locate bighorn sheep water developments, in so far as practical, in areas inaccessible to wild horses and burros.

If necessary, the water developments will be fenced to allow bighorn access but to keep wild horses and burros from depleting the water supply or degrading the forage resources.

LC2-4

Remove wild horses and burros from the Ash Meadows - Last Chance Range that occur outside the herd management area.

LC2-5

Competitive ORV events, including motorcycle events, are not compatible with crucial sheep habitat within the habitat management areas. All competitive events should be routed to avoid crucial habitat when alternative routes exist. When no alternative routes exist, events should be limited to existing roads (those roads shown on the most recent U.S.G.S. topographic maps), and no pitting or spectator areas should be authorized within the HMA.

LC2-6

Work with mining companies on a voluntary basis to avoid exploratory activity (i.e., drilling, blasting, etc.) in lambing grounds between February 1 and May 1, and within one mile of bighorn waters between May 1 and October 1.

LC2-7

Do not allow surface occupancy of oil and gas, and leasable mineral leases within one mile of lambing grounds between February 1 and May 1, and one mile of bighorn waters between May 1 and October 1.

LC2-8

Do not issue mineral sales within crucial bighorn sheep habitat.

LC2-9

Do not increase livestock distribution from current use areas within the HMA.

LC2-10

Fences should be constructed only when absolutely necessary and then to Bureau standards as identified in the Bureau Fencing Handbook.

LC2-11

Retain desert bighorn sheep habitat in public ownership.

3. Monitoring

The following monitoring studies will be installed and read on the time frames given.

a. Objective LC1

LC1-M1

The Nevada Department of Wildlife will conduct census surveys to determine population size, recruitment, structure, and distribution by the end of the third year after the initial transplant and will continue to do so on a two to three year cycle thereafter.

b. Objective LC2

LC2-M1

The BLM will determine the range condition class for each of the five bighorn crucial habitat areas as delineated on the HMP maps and the Mt. Montgomery area by 1990.

LC2-M2

Within three years of the reintroduction or establishment of bighorn sheep within a particular location, the BLM will

determine key forage species for that area and conduct utilization studies within one mile of key waters to determine forage use levels. Once bighorn are established throughout the HMA, one or two key areas will be established in bighorn concentration areas to determine forage use levels. Utilization will be read on a one to three year cycle, depending upon use levels. (For instance, if use levels are below 20 percent, utilization studies may be deferred for several years.) If average utilization on key forage species exceed 39 percent, utilization will be read annually and frequency trend studies will be established and read on a five year cycle. Use should not exceed an average of 50 percent of the current year's growth on key forage species.

LC2-M3

Install and read utilization and frequency trend studies in the Mt. Montgomery area by 1990. The key area will be located in an area that includes livestock grazing (Mt. Stirling Allotment), wild horse and burro use (Spring Moutain HMAP), and within bighorn sheep habitat (Southern Nye Bighorn HMP). Utilization will be read annually and trend will be read every three to five years. Utilization levels by all ungulates should not exceed an average of 50 percent use on key species of the current years annual growth.

LC2-M4

Conduct wild horse and burro surveys every two to three years within the HMA to determine the extent if any of wild horse and burro numbers and distribution outside the HMAP.

B. Specter Habitat Management Area

1. Background

Of the 23,460 acres of potential desert bighorn sheep habitat, approximately 6,620 acres are rated as excellent habitat and 14,090 acres as good habitat. The only real difference between the excellent and good habitat is the elevational gradients and slope characteristics such as precipitous or nonprecipitous terrain. The Skeleton Hills, though part of the habitat management area, are not at this time included in the analysis of bighorn habitat due to their distance from potential good habitat. Though 1,770 acres of the Striped Hills and Spector Range are located within the Nevada Test Site boundary, no management prescriptions are proposed for habitat within the Test Site. The close proximaty of the Specter Range to the Test Site will require close coordination with the DOE to insure public access yet maintain adequate security. The lack of water of any kind within the range necessitates the construction of

water developments to improve otherwise good habitat to excellent habitat for desert bighorn.

2. Objectives and Planned Actions

a. Objective SR1

Reestablish and manage for approximately 129 (116 - 142) desert bighorn sheep in the Specter HMA by the year 2005.

b. Planned Actions

SR1-1

The NDOW will reintroduce desert bighorn sheep to the Specter HMA by 1991 and will make augmentation releases as necessary.

SR1-2

The BLM, NDOW and Fraternity of the Desert Bighorn (FDB) will cooperatively develop appropriate waters necessary to meet the above objectives.

At this time, the following water developments are anticipated.

Catchment Name	Approximate Location
Unnamed	T.16S., R.52E., Section 2
Unnamed*	T.16S., R.52E., Section 4
Unnamed*	T.15S., R.52E., Section 28
Unnamed*	T.15S., R.52E., Section 29
Unnamed	T.15S., R.51E., Section 26
Unnamed	T.15S., R.51E., Section 11

* Catchments to be built prior to transplant.

SR1-3

NDOW will conduct appropriate monitoring studies to determine population size, structure and distribution to evaluate whether the above objective is being met. (See SR1-M1).

c. Objective SR2

Maintain and where necessary improve desert bighorn sheep habitat and forage condition.

d. Planned Actions

SR2-1

The BLM will conduct appropriate habitat monitoring studies to insure that use levels are consistent with maintaining

existing habitat conditions. The extent and frequency of habitat monitoring studies will be based upon bighorn sheep concentration areas and use patterns as determined by NDOW population monitoring studies. (See SR2-M1 and SR2-M2).

SR2-2

Insure that the Specter HMA remains free of wild horse and burro use as currently identified in the Esmeralda-Southern Nye RMP. This may require the gathering of animals if they begin to establish themselves within the habitat management area. (See SR2-M3).

SR2-3

Competitive ORV events, including motorcycle events, are not compatible with crucial sheep habitat within the habitat management areas. All competitive events should be routed to avoid crucial habitat when alternative routes exist.

When no alternative routes exist, events should be limited to existing roads, (those roads shown on the most recent U.S.G.S. topographic maps) and no pitting or spectator areas should be authorized within the HMA.

SR2-4

Work with mining companies on a voluntary basis to avoid exploratory activity (i.e., drilling, blasting, etc.) in lambing grounds between February 1 and May 1, and within one mile of waters between May 1 and October 1.

SR2-5

Do not allow surface occupancy of oil and gas, and mineral leases within one mile of lambing grounds between February 1 and May 1, and one mile of bighorn waters between May 1 and October 1.

SR2-6

Since there are no existing livestock preference or use within the HMA, do not license new livestock use within the HMA.

SR2-7

Do not issue mineral sales within crucial bighorn sheep habitat.

SR2-8

Fences should be constructed only when absolutely necessary, and then to Bureau standards as identified in the Bureau's Fencing Handbook.

e. Objective SR3

Insure public access for noncomsumptive and consumptive recreational use of the wildlife resource within the HMA.

f. Planned Actions

SR3-1

The BLM and NDOW will cooperatively work with the DOE to develop a Cooperative Agreement that will insure public use of the wildlife resource while enabling DOE to maintain adequate security for the Nevada Test Site. The plan should be developed by 1992.

3. Monitoring

The following monitoring studies will be installed and read on the time frames given.

a. Objective SR1

SR1-M1

The Nevada Department of Wildlife will conduct census surveys to determine population size, recruitment, structure, and distribution by the end of the third year after the initial transplant and will continue to do so on a two to three year cycle thereafter.

b. Objective SR2

SR2-M1

The BLM will determine the range condition class for each of the four bighorn crucial habitat areas as identified on the HMP maps by 1990.

SR2-M2

Within three years of the reintroduction of bighorn sheep, the BLM will determine key forage species and conduct utilization studies within one mile of key waters to determine forage use levels. Once bighorn are established throughout the HMA, one key area will be established in a bighorn concentration area to determine use levels. Utilization will be read on a one to three year cycle, depending upon use levels. (For instance, if

use levels are below 20 percent, utilization studies may be deferred for several years). If average utilization on key forage species exceed 39 percent, utilization will be read annually and frequency trend studies will be established and read on a five year cycle. Use should not exceed an average of 50 percent of the current years growth on key forage species.

SR2-M3

Survey the Specter Range at least every three years to insure that wild horses or burros do not become established within the Specter Range HMA.

C. Bare Mountain Habitat Management Area

1. Background

Of the 20,400 acres of desert bighorn sheep habitat within the HMA, approximately 5,900 acres is expected to be used by bighorn, livestock, and wild horses and burros. The use by the different ungulates will have to be closely monitored to ensure that multiple use objectives as defined by the Esmeralda-Southern Nye RMP are met. Current burro distribution if allowed to continue may cause some degradation of bighorn sheep habitat at the lower elevation. However, once a herd management plan is developed and implemented, potential burro problems should be greatly reduced. Grazing practices developed in conjunction

with AMPs for the Montezuma and Razorback allotments could have a positive influence on maintaining and improving desert bighorn sheep habitat.

Though mining activity is fairly extensive along the north and east boundaries of the HMA, current activity levels do not pose a conflict with the establishment of desert bighorn. However, an increase in the degree and intensity of mining activity could effect future establishment efforts depending upon the location of new activity.

2. Objectives and Planned Actions

a. Objective BR1

Establish and manage for approximately 95 (86-105) desert bighorn sheep in the Bare Mountain HMA by the year 2010.

b. Planned Actions

BR1-1

The Nevada Department of Wildlife will introduce desert bighorn sheep to the Bare Mountain HMA by 1996 or after the water developments are functioning and will make augmentation releases as necessary.

BR1-2

The BLM, NDOW, and FDB will cooperatively develop appropriate waters necessary to meet the above objective.

At this time, the following water developments are anticipated and will be built prior to the introduction:

Catchment Name	Approximate Location
Unnamed	T.13S., R.47E., Section 2 SWSW
Unnamed	T.12S., R.47E., Section 34 NW
Unnamed	T.12S., R.47E., Section 21
Unnamed	T.13S., R.47½E., Section 23

BR1-3

NDOW will conduct appropriate monitoring studies to determine population size, structure, and distribution to evaluate whether the above objective is being met. (See BR1-M1).

c. Objective BR2

Maintain and where necessary improve desert bighorn sheep habitat and forage condition.

d. Planned Actions

BR2-1

The BLM will conduct appropriate rangeland monitoring studies to insure that forage use levels and trend are consistent with multiple use management objectives. The extent and frequency of monitoring studies will be based upon potential conflict areas between wild horse and burros, livestock and desert bighorn sheep. (See BR2-M1, BR2-M2, and BR2-M3).

BR2-2

Insure that utilization of key forage species does not exceed an average of 50 percent of the current years growth and range condition should be managed for good condition within the Tarantula Canyon/Species Spring area. (See BR2-M3 and BR2-M4).

BR2-3

Work with the livestock permittee to insure that Species Spring meets multiple use objectives by fencing the source and piping water down the valley to a trough for livestock and wild horse and burro use, and making water available at the source for desert bighorn sheep.

BR2-4

Competitive ORV events, including motorcycle events, are not compatible with crucial sheep habitat within the habitat management areas. All competitive events should be routed to avoid crucial habitat when alternative routes exist. When no alternative routes exist, events should be limited to existing roads (those roads shown on the most recent U.S.G.S. topographic maps), and no pitting or spectator areas should be authorized within the HMA.

BR2-5

Work with mining companies on a voluntary basis to avoid exploratory activity (i.e., drilling, blasting, etc.) in lambing grounds between February 1 and May 1, and within one mile of bighorn waters between May 1 and October 1. (This does not pertain to existing mining operations.)

BR2-6

Do not allow surface occupancy of oil and gas, and mineral leases within one mile of lambing grounds between February 1 and May 1, and one mile of bighorn waters between May 1 and October 1.

BR2-7

Fences should be constructed only when absolutely necessary, and then to Bureau standards as identified in the Bureau's Fencing Handbook.

3. Monitoring

The following monitoring studies will be installed and read on the time frames given.

a. Objective BR1

BR1-M1

The Nevada Department of Wildlife will conduct census surveys to determine population size, recruitment, structure, and distribution by the end of the third year after the initial transplant and will continue to do so on a two to three year cycle thereafter.

b. Objective BR2

BR2-M1

The BLM will determine the range condition class for bighorn crucial habitat areas by 1992.

BR2-M2

Within three years of the reintroduction of bighorn sheep, the BLM will determine key forage species and conduct utilization studies within one mile of key waters to determine forage use levels. Once bighorn are established throughout the HMA, one key area will be established in a bighorn concentration area to determine use levels. Utilization will be read on a one to three year cycle, depending upon use levels. (For instance, if

use levels are below 20 percent, utilization studies may be deferred for several years) If average utilization on key forage species exceed 39 percent, utilization will be read annually and frequency trend studies will be established and read on a five year cycle. Use should not exceed an average of 50 percent of the current years growth on key forage species.

BR2-M3

Determine the existing range condition for the Tarantula Canyon/Species Spring area by 1992. If range condition is less than good, establish specific objectives and actions appropriate to improve the range conditions to the good condition class.

BR2-M4

Install and read utilization and frequency trend studies in the Tarantula Canyon/Species Spring area by 1992. The key area will

be located in an area that receives use by livestock, wild burros, and bighorn sheep. Utilization will be read annually and trend will be read every three to five years. Utilization levels should not exceed an average of 50 percent use of the current years growth of key forage species.

V. EVALUATION AND MONITORING

See Forms 6780-2 that follow this section.

Monitoring will be conducted according to Bureau standards and will be directed towards providing the data base necessary to evaluate the HMP objectives. Due to funding and manpower limitations, it may be necessary to prioritize monitoring efforts in the future. Where it becomes unfeasible to conduct all the monitoring studies identified in this plan, monitoring in areas where different ungulates compete for forage resources will take priority. For specific monitoring actions proposed in this plan see the monitoring section for each HMA under "IV. Management Objectives and Planned Actions".

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
LC1: Reestablish and manage for approximately 143 (129-157) desert bighorn sheep in the Last Chance HMA by the year 2004.		LC1-1: The NDOW will reintroduce desert bighorn to the Last Chance HMA by 1990 and will make augmentation releases as necessary.		LC1-M1: The NDOW will conduct census surveys to determine population size, recruitment, structure, and distribution by the end of the third year after the initial transplant and will continue to do so on a two to three year cycle thereafter.	
		LC1-2: The BLM, NDOW, and Fraternity of the Desert Bighorn (FDB) will cooperatively develop appropriate waters (9) necessary to meet the above objective.		NDOW and BLM biologists and BLM operations personnel will conduct project survey and design with the assistance of	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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				the district landscape architect and hydrologist to insure that the projects are consistent with VRM and watershed objectives. The FDB will construct some projects per Volunteer Agreement.	
		LC1-3: Work with the U.S. Fish & Wildlife Service to insure that Point of Rocks Springs will remain available to desert bighorn.		Coordinate with the U.S. FWS Ash Meadows refuge personnel and conduct Sec. 7 consultation with FWS personnel at the Great Basin Complex in Reno, Nevada.	

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		LC1-4: NDOW will conduct appropriate monitoring studies to determine population size, structure, and distribution to evaluate whether the above object is being met.		See LC1-1 above.	
LC2: Maintain and where necessary improve desert bighorn sheep habitat and forage conditions.		LC2-1: The BLM will conduct appropriate habitat monitoring studies to insure that use levels are consistent with maintaining existing forage condition.		LC2-M1: The BLM will determine the range condition class for each of the five bighorn crucial habitat areas as delineated on the HMP maps and the Mt. Montgomery area by 1990.	

INSTRUCTIONS

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				LC2-M2: Within three years of the reintroduction or establishment of bighorn sheep within a particular location, the BLM will determine key forage species for that area and conduct utilization studies within one mile of Key Waters to determine forage use levels. Once bighorn are established throughout the HMA, one or two key areas will be established in bighorn concentration areas to determine forage use levels.	

INSTRUCTIONS

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				Utilization will be read on a one to three year cycle depending upon use levels. If average utilization on key forage species exceed 39 percent, utilization will be read annually and frequency trend studies will be established and read on a five year cycle. Use should not exceed an average of 50 percent of the current year's growth on key forage species.	

INSTRUCTIONS

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				LC2-M3: Install and read utilization and frequency trend studies in the Mt. Montgomery area by 1990. The key area will be located in an area that includes livestock grazing (Mt. Stirling Allotment), wild horse and burro use (Spring Mtn. HMAP) and within bighorn sheep habitat. Utilization will be read annually and trend will be read every three years. Utilization levels by all ungulates should not exceed	

INSTRUCTIONS

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				an average of 50 percent use on key species of the current year's annual growth.	
		LC2-2: Where possible do not exceed recommended wild horse and burro numbers in the Last Chance Herd Management Area as identified in the Spring Mountain HMAP.		LC2-M4: Conduct wild horse and burro surveys every two to three years within the HMA to determine the extent if any of wild horse and burro number and distribution outside the HMAP.	

INSTRUCTIONS

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2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		LC2-3: Locate bighorn sheep water developments, insofar as pratical, in areas innaccessible to wild horses and burros. If necessary, the water developments will be fenced to allow bighorn access but to keep wild horses and burros from depleting the water supply or degrading the forage resources.		Project sites will be carefully evaluated as to the possibility of wild horse and burro access. When appropriate the wild horse and burro specialist will provide input as to the liklihood of wild horses or burros finding and using the water developments. Persistent problems of burro use on	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
				bighorn waters may require removal of problem burros or fencing of portions of the HMAP. Waters will be closely monitored by NDOW & BLM personnel to determine if and to what extent burro problems may occur.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		LC2-4: Remove wild horses and burros from the Ash Meadows - Last Chance Range that occur outside the herd management area.		BLM & NDOW personnel will closely monitor wild horse populations and distribution in in Ash Meadows and Last Chance. Once the wild horses and burros become a problem they should be removed.	
		LC2-5: Competitive ORV events, including motorcycle events, are not compatible with crucial sheep habitat within the		Upon receipt of ORV competitive event proposals that are proposed in or near the HMA, the proposal	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		HMAs. All competitive events should be routed to avoid crucial habitat when alternative routes exist. When no alternative routes exist, events should be limited to existing roads (those roads shown on the most recent U.S.G.S. topographic maps), and no pitting or spectator areas should be authorized within the HMA.		will be reviewed by BLM & NDOW biologists to determine if the proposal could have negative impacts on the HMP objectives. BLM and NDOW will work closely with the promotor to select alternative routes that would avoid the HMA.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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		LC-6: Work with companies on a voluntary basis to avoid exploratory activity (i.e., drilling, blasting, etc.) in lambing grounds between February 1 and May 1, and one mile of bighorn waters between May 1 and October 1.		Mining notices and plans of operations proposed in the HMA. will be reviewed by BLM & NDOW biologists for potential impacts to bighorn. Work with mining companies to avoid or reduce potential impacts to bighorn. BLM & NDOW will develop maps delineating lambing grounds and areas within one mile of waters for use by BLM mineral specialists.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		LC2-7: Do not allow surface occupancy of oil and gas, and leasable mineral leases within one mile of lambing grounds between February 1 and May 1, and one mile of bighorn waters between May 1 and October 1.		BLM & NDOW biologists will develop maps delineating lambing grounds and areas within one mile of waters as the HMP is implemented and data becomes available. The maps will be used by minimal specialist to know where appropriate restrictions or stipulations will be necessary.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		LC2-8: Do not issue mineral sales within crucial bighorn sheep habitat.		Appropriate maps will be provided to BLM mineral specialists so that they know what areas not to issue minerals sales in.	
		LC2-9: Do not increase livestock distribution from current use areas within the HMA.		BLM & NDOW biologists will review all proposed livestock water developments and fences that are proposed in/or near the HMA. If such projects will result in extension of	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
				livestock use in the HMA, they will not be allowed.	
		LC2-10: Fences should be constructed only when absolutely necessary and then to Bureau standards as identified in the Bureau Fencing Handbook.		BLM & NDOW biologists will review all proposed fences within the HMA to insure that they are absolutely necessary and are to Bureau standards for fences in bighorn habitat.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

GPO 841-060

Form 6780–2
(July 1981)
(formerly 6620–3)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		LC2-11: Retain desert bighorn sheep habitat in public ownership.		Applications for desert land entry, withdrawals, right-of-ways, and land sales will be reviewed through the EA process for their impacts to desert bighorn and their habitat. The benefit should clearly outway the potential impacts.	
SR1: Reestablish and manage for approximately 129 (116-142) desert bighorn sheep in the Specter HMA by the year 2005.		SR1-1: The NDOW will reintroduce desert bighorn sheep to the Specter HMA by 1991 and will make augmentation releases as necessary.		SR1-M1: Same as under LC1-1.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		SR1-2: The BLM, NDOW, and FDB will cooperatively develop appropriate waters (6) necessary to meet the above objectives.		Same as LC1-2.	
		SR1-3: NDOW will conduct appropriate monitoring studies to determine population size, structure and distribution to evaluate whether the above objective is being met.		Same as LC1-1.	

INSTRUCTIONS

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4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
SR2: Maintain and where necessary improve desert bighorn sheep habitat and forage condition.		SR2-1: Same as LC2-1.		Same as LC2-M1, LC2-M2, and LC2-M3.	
		SR2-2: Insure that the Specter HMA remains free of wild horse and burro use as currently identified in the Esmeralda-Southern Nye RMP.		Same as LC2-M4 and remove wild horses and burros from the HMA if necessary.	
		SR2-3: Same as LC2-5.		Same as LC2-5.	
		SR2-4: Same as LC2-6.		Same as LC2-6.	

INSTRUCTIONS

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2. List specific planned actions to be initiated to meet each specific objective.
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4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		SR2-5: Same as LC2-7.		Same as LC2-7.	
		SR2-6: Since there are no existing livestock preference or use within HMA, do not license new livestock use within the HMA.		The BLM range staff will be notified of this action once the HMP is finalized.	
		SR2-7: Same as LC2-8.		Same as LC2-8.	
		SR2-8: Same as LC2-10.		Same as LC2-10.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
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3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
SR3: Insure public access for nonconsumptive and consumptive recreational use of the wildlife resource within the HMA.		SR3-1: The BLM and NDOW will cooperatively work with the DOE to develop a Cooperative Agreement that will insure public use of the wildlife resource while enablign DOE to maintain adequate security for the Nevada Test Site. The plan should be developed by 1992.		Self explanatory.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
BR1: Establish and manage for approximately 95 (86-105) desert bighorn sheep in the Bare Mountain HMA by the year 2010.		BR1-1: The NDOW will introduce desert bighorn sheep to the Bare Mountain HMA by 1996 or after the water developments are functioning and will make augmentation releases as necessary.		Same as LC1-M1.	
		BR1-2: The BLM, NDOW, and FDB will cooperatively develop appropriate waters (4) necessary to meet the above objective.		Same as LC1-2.	

INSTRUCTIONS

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4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		BR1-3: Same as LC1-4.		Same as LC1-M1.	
BR2: Maintain and where necessary improve desert bighorn sheep habitat and forage condition.		BR2-1: The BLM will conduct appropriate rangeland monitoring studies to insure that forage use levels and trend are consistent with multiple-use management objectives. The extent and frequency of monitoring studies will be based upon potential conflict areas between wild horse and burros, livestock, and desert bighorn sheep.		BR2-M2: Same as LC2-M2. BR2-M1: The BLM will determine the range condition class for bighorn crucial habitat areas by 1992. BR2-M3: Determine the existing range condition for the Tarantula Canyon/ Species Spring area by 1992. If range condi-	

INSTRUCTIONS

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3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
				tion is less than good, establish specific objectives and actions appropriate to improve the range conditions to the good condition class.	
		BR2-2: Insure that utilization of key forage species does not exceed an average of 50 percent of the current years growth and range condition should be managed for good condition within the Tarantula		Same as BR2-M3 above. BR2-M4: Install and read utilization and frequency trend studies in the Tarantula Canyon/ Species Spring	

INSTRUCTIONS

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2. List specific planned actions to be initiated to meet each specific objective.
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		Canyon/Species Spring area.		area by 1992. The key area will be located in an area that receives use by livestock, wild burros, and bighorn sheep. Utilization will be read annually and trend will be read every three to five years.	
		BR2-3: Work with the livestock permittee to insure that species spring meets multiple-use objectives by fenc-		BLM personnel will work with the livestock permittee to design an appropriate develop-	

INSTRUCTIONS

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3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		ing the source and piping water down the valley to a trough for livestock and wild horse and burro use, and making water available at the source for desert bighorn sheep.		ment that will meet all multiple-use objectives. The Battle Mountain District will have lead responsibility and will be assisted by Las Vegas District personnel if requested.	
		BR2-4: Same as LC2-5.		Same as LC2-5.	
		BR2-5: Same as LC2-6.		Same as LC2-6.	

INSTRUCTIONS

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3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

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		BR2-6: Same as LC2-7. BR2-7: Same as LC2-10.		Same as LC2-7. Same as LC2-10.	

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3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
SSlone/gm 11/9/87 Wang No. 0300L					

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
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VI. COORDINATION

A. Other BLM Programs

1. Livestock Grazing

Of the 76,740 acres covered by this plan, 14,260 acres are grazed by livestock. Only 1,840 acres of the Last Chance HMA is grazed as part of the Mt. Stirling Allotment. This allotment covers 153,262 acres with a five year license average of 64 cows yearlong. Current livestock use within the HMA, though

yearlong, will have little effect on the objectives of this plan as the bighorn habitat being grazed is of limited quality with expected bighorn use primarily occurring during migration between the Spring Mountain Range and the HMA. The following planned actions pertain to livestock grazing within this HMA: LC2-9, LC2-10, and LC2-M3.

The Specter HMA is not grazed by livestock at all, nor are there any grazing privileges associated with this area. (See planned action SR2-6).

Within the Bare Mountain HMA, livestock grazing occurs only on that area (north one-half) managed by the Battle Mountain District. 12,420 acres of this HMA lies within the Montezuma (8,585 acres) and Razorback (3,835 acres) allotments. Due to

rough terrain, about 4,755 acres of these allotments are inaccessible to livestock. The current livestock five year average licensed use for each allotment is 10,900 AUMs and 1,344 AUMs for cattle yearlong, respectively. The Montezuma Allotment was identified as an "I" allotment in the Esmeralda-Southern Nye RMP and the Razorback Allotment as an "M" allotment.

The development of AMPs in these two allotments should be closely coordinated with this plan to ensure that multiple use objectives as identified in the RMP and this HMP are attainable. To ensure that the HMP objectives are met, the following planned actions pertain to livestock grazing: BR2-2, BR2-3, BR2-7, BR2-M3, and BR2-M4.

2. Wild Horses and Burros

Wild horse and burro use occurs within the Last Chance and Bare Mountain HMAs. Currently, burro use is restricted primarily to the Mt. Montgomery area of the Last Chance HMA. Some burro use occurs within other parts of the HMA and outside the Last Chance Herd Management Area (HMAP). Though current burro use is not a serious problem, any population increase and use outside the HMAP may impact bighorn habitat in the future.

Wild horses were removed from Ash Meadows in 1985. However, since the removal of these horses, others have moved in from California. Though horse use within the Last Chance HMA is

currently very light, an increase in horse use will have negative impacts on desert bighorn sheep habitat quality.

The following planned actions pertain to wild horse and burro management within the HMA: LC2-2, LC2-3, LC2-4, LC2-M3, LC2-M4, SR2-2, SR2-M3, BR2-1, BR2-2, BR2-M3, and BR2-M4.

3. Energy/Minerals Management

Currently, there is only one oil and gas lease within the HMA. Three sections are under lease with only about 500 acres of the lease within the Last Chance HMA. Though oil and gas leasing does not currently conflict with HMP objectives, a turnaround in the economy regarding oil and gas activity could result in an increase demand for exploratory drilling within the HMA. Protective stipulations may be necessary on a case-by-case basis to ensure that multiple use objectives are met. Planned actions LC2-7, SR2-5, and BR2-6 apply to oil and gas exploration and mineral leasing.

Mining activity within the HMA currently occurs only in the Bare Mountain HMA. Existing activity is restricted to the north and east boundaries of the HMA and currently do not create serious conflicts with the objectives of the plan. However, an increase in the intensity and scope of existing or new mineral activity may have an effect on HMP objectives. The degree of effect will depend upon the scope and location of additional activity.

Mining operators should be encouraged to avoid crucial bighorn sheep habitat areas during the critical lambing period and during the dry period. This will require close coordination and cooperation between the Bureau and operators. CFR 3809 will be used as the vehicle to mitigate or reduce potential impacts to crucial desert bighorn sheep habitat on a case-by-case basis.

BLM will attempt to define those areas most sensitive to energy and mineral exploration and notify the affected parties so that they can better plan around the sensitive areas and seasons. Each plan of operation will be reviewed for possible impacts on bighorn sheep or sheep habitat, and recommendations will be generated to mitigate the impacts. The process will be part of the normal review process that now occurs on receipt of notices and plans of operations. Planned actions LC2-6, SR2-4, and BR2-5 apply to mineral activity.

4. Land Disposal

Approximately 500 acres within the Last Chance HMA are identified in the Esmeralda-Southern Nye RMP as public lands open to disposal to private ownership. The lands in question are within the Pahrump, Nevada township boundary and are part of a larger scale land disposal identified in the RMP. Of the 500 acres, 100 acres are in crucial bighorn sheep habitat at Highland Peak. Though the land disposal would not have immediate impacts on the HMP objectives, long term effects would be to increase human encroachment in sheep habitat which may

magnify impacts in the long term. Before any lands in the HMA are disposed of, a thorough analysis of the impacts should be conducted to determine the merits of the disposal and to compare the relative benefits. Planned action LC2-11 recommends that sheep habitat be retained in public ownership.

5. Forest and Woodland Products

There are no forest or woodland resources accessible within the HMA and consequently there should be no conflict between land use plan objectives and this plan.

6. Soil, Water, and Air Resources

Most projects initiated under watershed guidance will complement the wildlife objectives of this HMP. Likewise, most of the planned actions of this HMP will enhance the long-term watershed qualities of this area. To ensure adequate consideration for protecting or enhancing watershed values, a soil scientist or hydrologist will be consulted in the design of wildlife projects when needed.

7. Recreation Management

As wildlife habitat conditions and populations of desert bighorn sheep improve through implementation of this plan, consumptive and nonconsumptive recreational opportunities will be enhanced.

If population objectives are met, approximately 264 annual days of hunting and wildlife associated recreation is expected.

The recreation land use plan objective states "Provide for off-road vehicle management areas, both for competitive and noncompetitive use. Minimize conflicts and problems with other uses or interests on national resource lands".

All of the HMA is designated as open to ORV competitive events except for a small portion of crucial bighorn sheep habitat adjacent to the Point of Rocks Springs which is in the Last Chance HMA. This area is closed to all ORV competitive use. The only other restriction applies to ORV competitive events in the Specter Range HMA. Here, except for a valley between two crucial habitat areas which is designated as open, ORV competitive events are limited to existing roads, trails, courses and washes. Because of the terrain of most crucial habitat areas, the likelihood of receiving proposals for competitive events within crucial habitat areas is fairly remote. However, any major ORV competitive event may have considerable impact on the objectives of this plan. To meet the objectives in the land use plan and in this HMP, ORV competitive events should be held outside the HMA where possible.

At the very least, an environmental assessment (EA) should be prepared to determine whether the proposed ORV competitive event would be consistent with land use plan objectives and to freely

evaluate the potential environmental impacts. The following planned actions apply to ORV activities: LC2-5, SR2-3 and BR2-5.

8. Support Actions

The success of the HMP depends upon the completion of a number of water developments. The Division of Operations will ensure the completion of Bureau funded projects. Operations will be responsible for project survey and design, supervise contracts, order materials, and complete force account projects. Equipment, tools, and manpower will also be needed. Helicopter time may be required for initial construction and maintenance of remote projects.

Support will also be required of the district landscape architect who will be involved in assisting with the design and location of water developments to assure compliance with VRM guidelines.

B. Other Agencies and Organizations

1. State Agencies

The Nevada Department of Wildlife as cooperator of this plan, will play a key part in the successful implementation of this plan. Though their primary responsibility will be to transplant desert bighorn to the respective HMAs and to monitor population

objectives, the Department will also play a key role in developing waters to enhance bighorn sheep habitat. Because the Nevada Department of Wildlife is a key cooperator of this plan and has ultimate responsibility for the wildlife resource, all multiple-use activities proposed within the HMAs that have potential to effect the success of this plan's objectives should be closely coordinated with the Department.

2. Federal Agencies

The U.S. Fish and Wildlife Service will be closely coordinated with to ensure that proposed actions in this plan will not effect threatened or endangered species. The Ash Meadows National Wildlife Refuge and U.S. Fish and Wildlife Service - Great Basin Complex Office will be coordinated with to determine if desert bighorn can use Point of Rocks Springs without impacting threatened or endangered species associated with the existing springs and ponds. The Department of Energy will be

coordinated with to ensure that the HMP objectives for the Specter HMA will not create unmanageable long term conflicts. Since part of the Specter Range extends into the Nevada Test Site, bighorn sheep are expected to move freely between lands administered by both DOE and BLM. Future hunting opportunities may create some security problems for DOE. If necessary, a separate cooperative agreement between DOE, BLM, and NDOW should be considered to address a resolution of any conflicts that may arise out of the successful implementation of this HMP.

3. Non-Governmental Organizations

Based upon past experience, the Fraternity of the Desert Bighorn (a non-profit organization in Las Vegas dedicated to protecting and enhancing desert bighorn sheep in Nevada) will be very involved with the development of water developments as identified in this plan. The Fraternity's participation in the past has included project construction, material donations, and in some cases helicopter time for sling-loading materils to the project sites. Their continued support for HMP implementation to enhance desert bighorn sheep is expected to continue.

VII. IMPLEMENTATION SCHEDULE

The following implementation schedule has been developed through fiscal year 1992. The project activities have been identified as well as who will be responsible to insure their completion. The units of completion are identified by reporting year. The implementation schedule depends upon the availability of money and manpower for the particular years. This may effect the implementation schedule, therefore the schedule is an approximation of plan sequences of actions.

IMPLEMENTATION SCHEDULE

(and Units of Accomplishment)

PROJECT ACTIVITY	RESPONSIBILITY	FY 88	FY 89	FY 90	FY 91	FY 92
Species Management						
Reintroduction or introduction of desert bighorn to:						

PROJECT ACTIVITY	RESPONSIBILITY	FY 88	FY 89	FY 90	FY 91	FY 92
Last Chance HMA	NDOW					
Specter Range HMA	NDOW					
Bare Mountain HMA	NDOW					
Water Developments						
Last Chance HMA						
Last Chance No. 1	NDOW					
Last Chance No. 2	NDOW					
Last Chance No. 3	NDOW					
Last Chance (Unnamed)	BLM					
Last Chance (Unnamed)	BLM					
Last Chance (Unnamed)	BLM					
Last Chance (Unnamed)	BLM					
Last Chance (Unnamed)	BLM					
High Peak	BLM					
Specter HMA						
Specter (Unnamed)	NDOW					
Specter (Unnamed)	NDOW					
Specter (Unnamed)	NDOW					
Specter (Unnamed	BLM					
Specter (Unnamed)	BLM					
Bare Mountain HMA						
Bare Mountain (Unnamed)	NDOW					
Bare Mountain (Unnamed)	NDOW					
Bare Mountain (Unnamed)	NDOW					
Bare Mountain (Unnamed)	BLM					
Springs						
Section 7 consultation	BLM					
with FWS for bighorn use of						
Point of Rocks Spring						
Species Spring Development	BLM					
Cooperative Management Agreement						
Develop CMA for Specter HMA	BLM/NDOW/DOE					
Habitat Monitoring Studies						
Last Chance HMA	BLM					
Specter Range HMA	BLM					
Bare Mountain HMA	BLM					

VIII. COST SCHEDULE AND BENEFIT/COST ANALYSIS

A. Cost Schedule

Costs for implementing and maintaining the HMP have been estimated through fiscal year 1992. The costs are not broken down for each

unit of accomplishment but are calculated for the total of all units for that fiscal year. Costs only include the Bureau's costs for project development and maintenance and monitoring studies.

The Nevada Department of Wildlife costs are not included but are expected to be about equal to the Bureau's. Project survey and design and NEPA compliance costs are included for both BLM and NDOW projects.

COST SCHEDULE

(Dollar figure in Thousands)

PROJECT ACTIVITY	FY 88		FY 89		FY 90		FY 91		FY 92		TOTAL	
	$	WM:	$	WM:	$	WM:	$	WM:	$	WM:	$	WM:
Water Developments												
Project Survey and Design		1:		1:		1:		1:		1:		5:
Construction			7.0:	1:	14.0:	1:	14.0:	1:	14.0:	1:	49.0:	4:
Maintenance					.2:		.3:		.5:		1.0:	
Spring Development			7.0:	1:							7.0:	1:
Cooperative Management Agreement						1:						1:
Habitat Monitoring Studies						1:		1:		1:		3:
Five-Year Total Expenditures											57.0	14

B. Benefit/Cost Analysis

A projected minimum of 264 annual hunting and wildlife associated recreation days is expected to result from the development of these projects. Economic benefits to the recreationists are estimated at more than $16,000 on an annual basis.

This new recreation activity should produce approximately $24,500 in additional expenditures, annually, in the regional economy;

providing income for guides and outfitters, hotels and lodging places, and eating and drinking establishments.

Over the long-term, benefits are estimated to exceed costs of the program by approximately six percent on an annual basis (benefit-to-cost ratio of 1.06).

IX. CONCURRENCE AND APPROVAL

This HMP as written meets with our concurrence and approval. The implementation of the HMP will depend upon the availability of funding and manpower, and other agency priorities.

_____ _____

Area Manager, Tonopah Resource Area — Date

Bureau of Land Management

_____ _____

Area Manager, Stateline Resource Area — Date

Bureau of Land Management

_____ _____

Regional Supervisor, Region III — Date

Nevada Department of Wildlife

District Manager, Battle Mountain District — Date

Bureau of Land Management

District Manager, Las Vegas District — Date

Bureau of Land Management

X. LITERATURE CITED

Bradley, W.G. and J.E. Deacon, 1965. Biotic Communities of Southern Nevada. Desert Research Institute.

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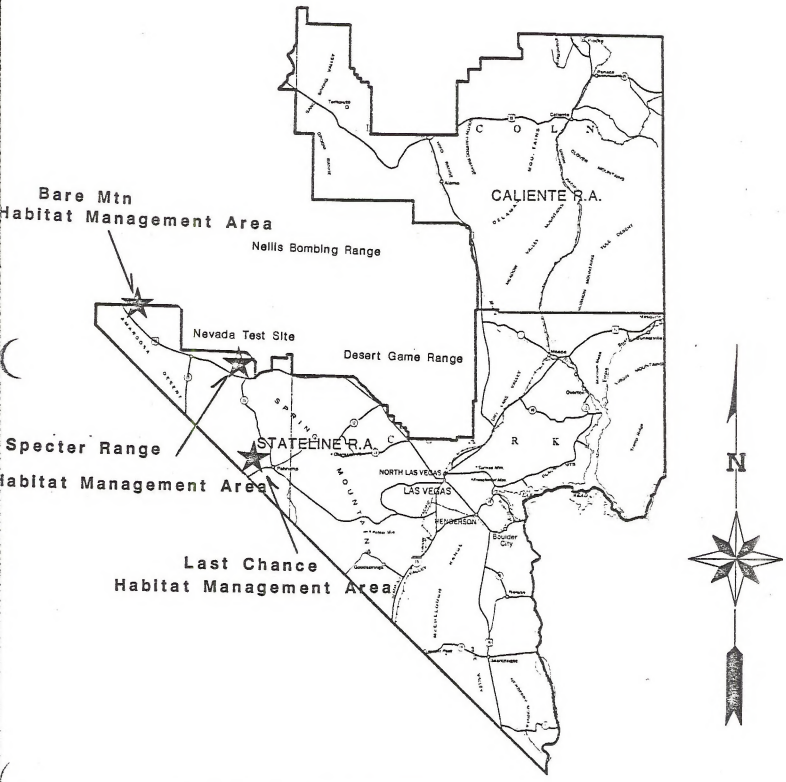
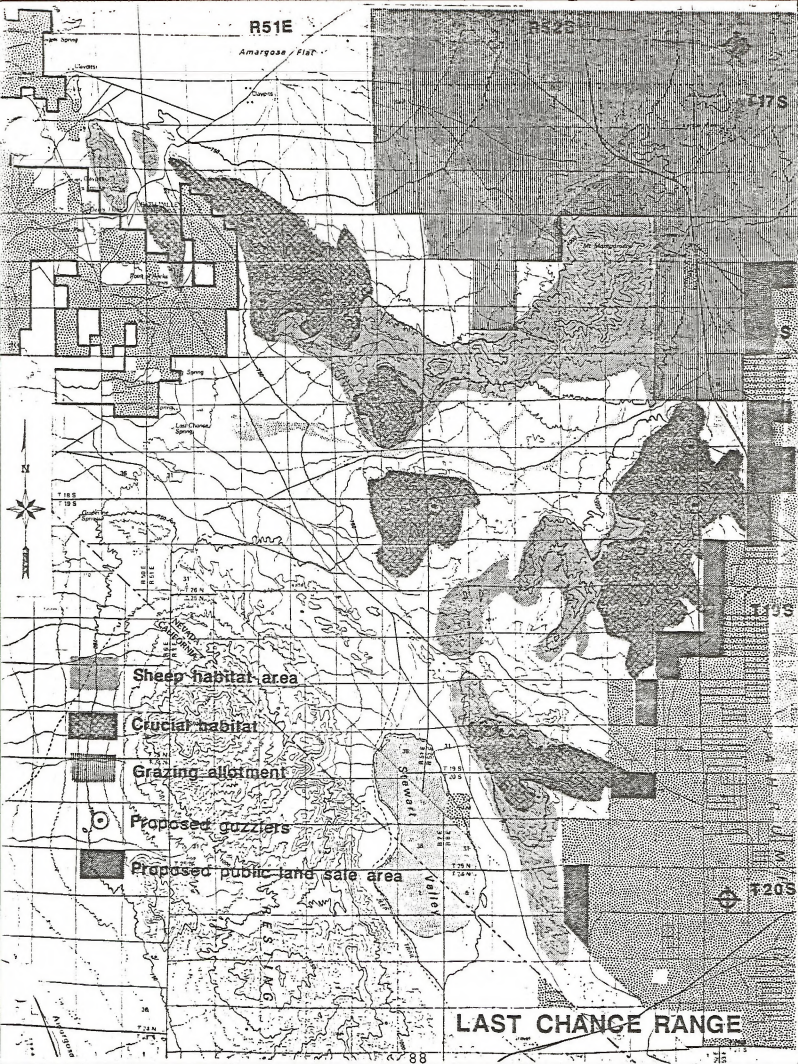
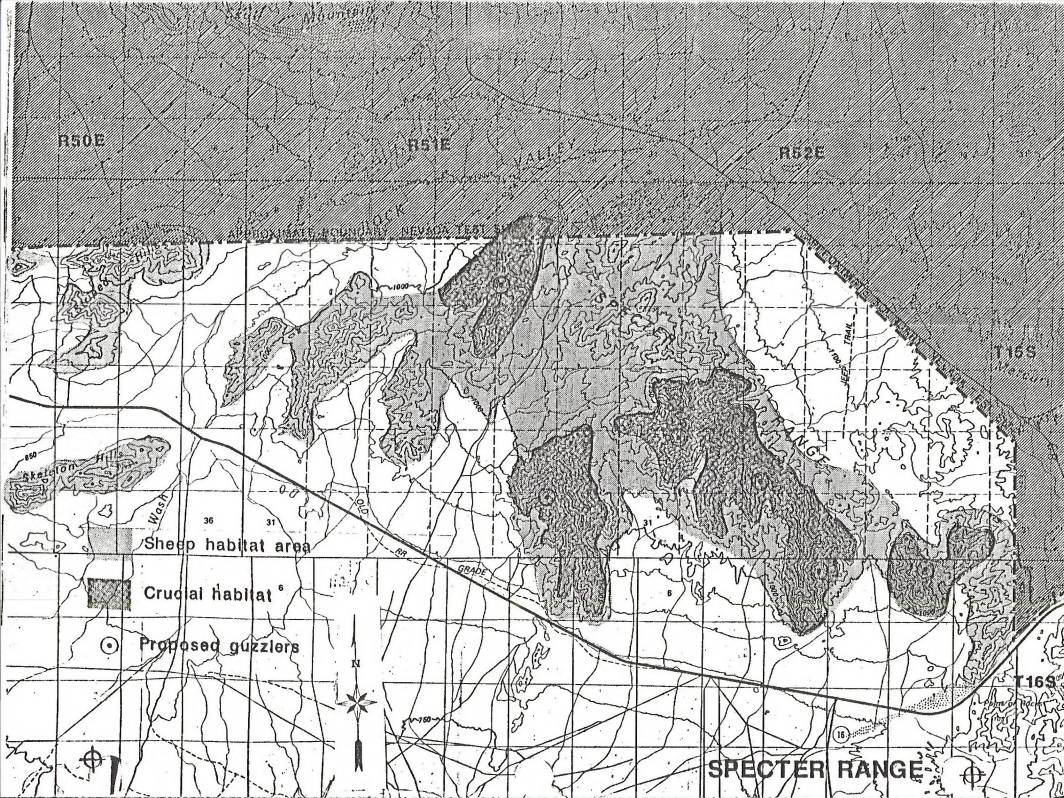
LOCATION MAP

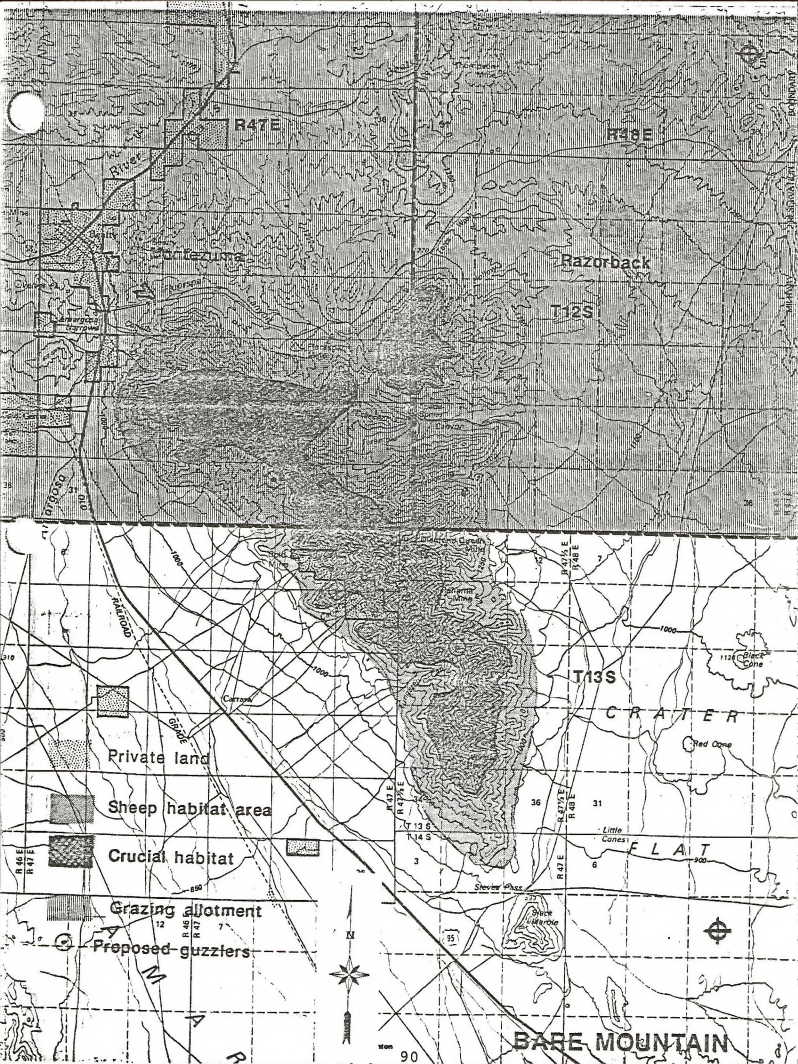
SOUTHERN NYE BIGHORN SHEEP HMP



LAS VEGAS DISTRICT


R51E
R42E
T17S
T19S
T20S
Amargosa Flat
Sheep habitat area
Crucial habitat
Grazing allotment
Proposed guzzlers
Proposed public land sale area
Stewart Valley
LAST CHANCE RANGE


R50E
R51E
R52E
T15S
T16S
Sheep habitat area
Crucial habitat 6
Proposed guzzlers
SPECTER RANGE


R47E
R48E
Razorback
T12S
T13S
CRATER
FLAT
Private land
Sheep habitat area
Crucial habitat
Grazing allotment
Proposed guzzlers
BARE MOUNTAIN

XII. ENVIRONMENTAL ASSESSMENT

Southern Nye Bighorn
Habitat Management Plan

I. Description of the Proposed Action and Alternatives

A. Proposed Action

The proposed action is to reestablish desert bighorn sheep on three mountain ranges in southern Nye County and to manage approximately 76,740 acres of public lands to reach the objectives as identified below. The mountain ranges include the Last Chance Range (32,880 ac.), also known as the Johnnie Range, the Specter Range (23,460 ac.), and Bare Mountain (20,400 ac.). The Last Chance and Specter ranges are administered by the Bureau of Land Management (BLM), Las Vegas District and Bare Mountain is split almost evenly between administration by the BLM, Ely District (north one-half) and the Las Vegas District (south one-half).

The specific objectives are listed below and the planned actions necessary to accomplish the objectives as proposed in the Southern Nye Bighorn Habitat Management Plan (HMP) are listed under "III. Proposed Actions and Environmental Impacts". Only those actions that are not already specifically addressed and approved in the Southern Nye Resource Management Plan (RMP) will be addressed in this Environmental Assessment (EA).

Proposed Objectives

1. Reestablish and manage for approximately 143 (range of 129-157) desert bighorn sheep in the Last Chance Habitat Management Area (HMA) by the year 2004.

2. Reestablish and manage for approximately 129 (range of 116-142) desert bighorn sheep in the Specter HMA by the year 2005.

3. Establish and manage for approximately 95 (range of 86-105) desert bighorn sheep in the Bare Mountain HMA by the year 2010.

4. Maintain and where necessary improve desert bighorn sheep habitat and forage conditions.

B. Alternatives

The only alternative analyzed in this Environmental Assessment (EA) is "no action". The planned actions as identified are necessary to reach the stated objectives. Depending upon public comment and the environmental analysis, some planned actions may be modified.

II. Existing Environment

1. Location

Refer to the enclosed maps for site specific locations of the three HMAs.

a. Last Chance Range

The Last Chance Range is a series of desert mountains that run primarily in a north-south orientation (see Map II). The range is comprised of half a dozen precipitous mountains, some isolated and some connected by rugged undulating terrain. The east end of the range begins along the west side of Pahrump, Nevada, and State Route 16 and ends on the west along the northeast corner of the Ash Meadows National Wildlife Refuge. The north boundary is Amargosa Flat and the south boundary near the Nevada/California stateline and Stewart Lake. The range covers approximately 12 miles east-west and 18 miles north-south.

b. Specter Range HMA

The Specter Range HMA begins on the west at Striped and Skeleton Hills which are located approximately three miles east of Lathrop Wells, Nevada and one half mile north and south of U.S. Highway 95 respectively (See Map III). The Specter Range begins approximately two miles east of Striped Hills and consists of a series of north-south trending mountains. The Specter Range is bordered on the south by U.S. Highway 95 and on the north and east by the Nevada Test Site, managed under withdrawal by the Department of Energy (DOE).

c. Bare Mountain

Bare Mountain is a large solitary desert mountain located approximately two miles southeast of Beatty, Nevada, and is approximately ten miles long and five miles wide (see Map IV). The mountain is parallel to, and two and one half miles east of U.S. Highway 95. Bare Mountain is bordered on the north by Fluorspar Canyon and on the east by Crater Flat.

2. Acreage

The following acreages have been identified within each habitat managment area (HMA) as having potential for desert bighorn sheep. The acreage not administered by the BLM is identified only as they relate to potential sheep use and is not parat of the HMP. Management objectives and actions will not apply to non-Bureau lands. The total acreage within the HMP is 76,740 acres. Other acreage, identified below, totals 2,300 acres and, though not part of the HMP, will probably be used by desert bighorn sheep in conjunction with habitat on public lands.

Acres of
Desert Bighorn Sheep
Habitat by HMA

	BLM Managed Lands (HMP Area)	Lands by Others (Not in HMP Area)	Total Sheep Habitat
Last Chance [1]	32,880	30	32,910
Secters [2]	23,460	1,770	25,230
Bare [1]	20,400	500	20,900
Total	76,740	2,300	79,040

[1] All non-HMP acreage is sheep habitat that lies within private land.
[2] All non-HMP acreage is sheep habitat that falls within the Nevada Test Site.

3. Topography and Elevation

The topography of the habitat management areas is typical of much of the basin and range physiographic province. The HMAs encompass north-south trending, linear, rugged mountain ranges that are separated by broad, gently-sloped valleys. Within the Last Chance HMA, the elevation varies from a low of 750 meters (2,460 feet) to a high of 1,304 meters (4,278 feet) at Mount Montgomery. The lowest elevation in the Specter HMA is 850 meters (2,790 feet) to a high of 1,485 meters (4,872 feet). The Bare Mountain HMA has the highest elevation with 1,838 meters (6,030 feet) and a low of 950 meters (3,117 feet). Slopes within bighorn habitat vary from five percent near the valley floors to one hundred percent in the steeper terrain, with most of the habitat containing slopes of forty to sixty percent.

4. Geology and Minerals

The geology of the area is comprised of three major rock units (as described in the Final Environmental Impact Statement, Nevada Test Site, September 1977). They include folded and faulted sedimentary rocks of the Paleozoic age, volcanic tuffs and lavas of the Tertiary age, and alluvium of late Tertiary and Quaternary age which are deposited in the valley floors due to erosion of nearby hills. The Paleozoic sedimentary rocks are generally many thousands of feet thick and are comprised of mainly carbonate rocks. The Tertiary age formations are generally less thick and are sometimes interspursed with Paleozoic rocks due to faulting and uplifting. Alluvial materials vary in depth with the greatest depths of 2,000 to 3,000 feet obtained in the central portions of the valleys.

5. Soils

The soils in the HMAs consist of primarily the Soil Orders Aridisols and Entisols. Entisols have only indistinct or lack genetic horizons and are commonly found an alluvial fans and in drainage ways. They consist mainly of Torriorthents with loamy-skeletal or coarse-loamy textured control sections. Aridisols have distinct genetic horizons and arid soil moisture regimes. Among the Aridisols, the Orthids are more common than Argids. This soil order is found on moderately old, stable land surfaces.

The Nye County southwest soil survey No. 785 has been completed by the Soil Conservation Service (SCS) and the BLM. Although this survey has not been published, specific soil map unit descriptions (MUDs) are completed for all designated map units in the area and are available at the SCS and BLM, Stateline Resource Area office.

6. Climate

Precipitation varies significantly over short distances with pronounced variations from year to year. Annual precipitation depends mainly on elevation and localized storm tracks, and varies on the average from about four inches at 3,000 feet to about twelve inches at 6,000 feet. Two major precipitation periods occur; one in summer as localized and often intense thunderstorms and the other in winter as intermittent snow cover at the higher elevations and as showers at the lower elevations. Winter precipitation is usually more widespread and less intense than summer precipitation.

Temperatures vary significantly along elevational gradients with a decrease of approximately 5.3°F for every 1,000 foot increase in elevation. Typical temperatures on the nearby Nevada Test Site which are fairly indicative of the HMA are as follows:

	Average Summer Temperatures		Average Winter Temperatures	
Location	High	Low	High	Low
Frenchman Flat (Valley Floor)	97°F	62°F	53°F	26°F
Rainier Mesa (Mesa Top)	77°F	61°F	37°F	27°F

7. Vegetation

The HMA supports vegetation typical of the Great Basin and Mojave desert shrub biomes. The vegetation can be broken into five biotic communities: creosote - bursage, blackbrush, saltbush, desert riparian, and pinyon-juniper. These communities are described by Bradley, W.G. and J.E. Deacon (1965). The vegetation associated with each is briefly described below.

a. Creosote Bush Community

The creosote bush community is located on valley floors nd the lower end of bajadas between 500 and 4,200 feet elevation.

Dominant shrubs in the creosote bush community are creosote bush (Larrea divaricata) and bur-sage (Ambrosia dumosa). Other shrubs include Mojave yucca (Yucca schidigera), range ratany (Krameria parvifolia), and brittle-bush (Encelia farinosa), cacti are quite common and include barrel cactus (Ferocactus acanthodes), beavertail cactus (Opuntia basilaris) jumping cholla (Opuntia giglouii). A few of the common grasses include Indian rice grass (Oryzopis hymenoides), six weeks fescue (Festuca octoflora), red brome (Bromus rubens), and big galleta (Hilaria rigida). Common forbs include paper flower (Psilostrope coperi), desert hyacinth (Brodiaea capata), desert trumpet (Eriogonum inflatum), and giant four-o'clock (Mirabilis froebelii).

b. Blackbrush Community

The blackbrush community is usually located on the upper end of the bajadas, between 4,200 to 6,000 feet elevation. The blackbrush community is dominated by a closely-spaced matrix of low growing blackbrush (Coleogyne ramosissima) interspersed with other shrubs. Joshua tree (Yucca brevifolia) is often associated with the blackbrush community. When Joshua tree is not present in the community it is often replaced with yucca (Yucca baccata).

Other commonly found shrubs include Mormon tea (Ephedra nevadensis), turpentine-broom (Thamnosma montana), wolf-berry (Lycium spp.) and bud sagebrush (Artemesia spinescens). Common grasses found in the community included red browe (Bromus rubens), wheatgrass brome (Bromus tectorum), Indian rice grass (Oryzopsis hymenoides), and big galleta (Hilaria rigida). A few of the the common forbs include wild onion (Allium nevadensis sp.), mariposa lly (Calohortus flexuosus), brittle spine flower (Chorizanthe brevicornu), and wedge-leaved draba (Draba cuneifolia).

c Saltbush Community

The saltbush community occurs as a mosaic within the creosote bush and blackbrush communities. Common shrubs within the saltbush community include shadscale (Atriplex confertifolia), four-winged saltbush (Atriplex canescens), hop sage (Grayia spinosa), and winter fat (Ceratoides lanata). A few of the common grasses include desert salt grass (Distichlis spicata), big galleta (Hilaria rigida) and fluffgrass (Tridens pulchellus). Forbs include iodine weed (Suaeda torreyana), yellow tansy mustard (Descurainina pinnata), desert mallow (Sphaeralcea ambigua), and spiny menodora (Menodora spinescens).

d. Desert Riparian Community

The desert riparian community occurs along intermittent washes from the lowest elevation (500 feet) of the Creosote bush community to the mid elevations (5,100 feet) of the blackbrush community. This community often supports a higher diversity of flora than the surrounding upland vegetation but unlike the stream riparian community the visual contrast change in vegetation is more subtle. Local thundershowers provide the runoff necessary to maintain the subsurface water that supports the desert riparian vegetation.

Shrubs common to the desert riparian community include desert willow (Chilopsis linearis), desert almond (Prunus fasciculata), catclaw (Acacia greggii), cheese weed (Hymenoclea salsola), and bladder sage (Salazeria mexicana). Common grasses include six-weeks three awn (Aristida adscensionis), sideoats grama (Bouteloua curtipendula), bush muhly (Muhlenbergia porteri), and sand dropseed (Sporobolus cryptandrus). Commonly found forbs include golden rod (Solidago spectabilis), sand verbena (Abronia spp.), night shade (Solanum triflorum), and plantago (Plantago insularis).

e. Pinyon-Juniper Community

The pinyon-juniper community occurs between the elevations of 6,000 feet to about 8,000 feet.

Dominant tree species include pinyon pine (Pinus monophylla) and Utah juniper (Juniperus osteosperma). Yellow pine (Pinus ponderosa) can occasionally be found in small stands at the higher elevations. Common shrubs found in this community include big sagebrush (Artemesia tridentata), wild rose (Rosa woodsii), desert squaw bush (Rhus trilobata), Mohanve desert buckbrush (Ceanothus greggii), mountain jointfir (Ephedra viridis), banana yucca (Yucca baccata), and cliffrose (Cowania mexicana). Common grasses include fringed brome (Bromus ciliatus), littleseed rice grass (Oryzopsis micrantha) and bottlebrush squirreltail (Sitanion hystrix). A few forbs include false solomon's seal (Smilacina stellata), desert sandwort (Arenaria macradenia), groundsel (Senecia sp.), and ground-cherry (Physalis hederaefolia).

Though an ecological site inventory has not been completed for Southern Nye County, appropriate inventory data from Clark County is included below to provide a rough idea of potential forage production. The production data presented is based upon an average year. Because desert bighorn sheep are, to a large degree opportunistic feeders, the forage production as given is expected to be considerably lower than what is actually available. In addition, based upon the investigator's observations, the total herbage production figures are probably lower than actually occurs, particularly in the steeper terrain.

Ecological Sites Descriptions
Sonoran Basin and Range
MLRA 30
(1983)

Ecological Site	No.	Elevation (In Feet)	Precipitation (In Inches)	Average Annual Air Dry (In Lbs/Ac.)	Desirable Forage Average Annual Production (In Lbs/Ac.)
Sandy Upland	30-41	3300-6200	8-12	500	134-284
Limy Upland	30-49	3300-6200	8-12	300	52-145
Grenitic Upland	30-13	3300-6200	8-12	300	39-108
Blackbrush Slope	30-14	3300-6200	8-12	250	43-93
Wash	30-28	1000-5400	3-12	400	28-100
Breaks	30-49	1000-6200	3-12	100	26

8. Animals

None of the three HMAs currently have desert bighorn sheep populations. However, NDOW and BLM have recognized the Last Chance Range as historic habitat. Bare Mountain and the Specter Range were identified indicating the presence of desert bighorn were found in the Specter Range by NDOW and BLM biologists. Desert bighorn were known to occur in the Northern Spring Mountains historically, and considering the proximity of this range to the Specter Range (less than one half mile away), there may perhaps have been some historic use in the Specter Range also.

Mule deer are generally absent in the three HMAs except for a small resident population on Bare Mountain.

Common wildlife species that inhabit the HMAs include bobcat, gray fox, kit fox, coyote, spotted skunk, striped skunk, badger, ring-tailed cat, black-tailed jackrabbit, desert cottontail, Merriam's kangaroo rat, pack rat, antelope ground squirrel, Gambel's quail, mourning dove, prairie falcon, red-tailed hawk, golden eagle, American kestrel, great-horned owl, burrowing owl, desert tortoise, Great Basin rattlesnake, speckled rattlesnake, Mojave green rattlesnake, gopher snake, red coachwhip, chuckwalla, and numerous other reptilian species.

The desert tortoise occurs on bajadas and in alluvial valleys adjacent to the mountains below 4,500 feet elevations. Populations are relatively low in the HMA as indicated by past inventories and the Last Chance Study Plot which estimated ten to fifteen tortoises per square mile.

9. Threatened, Endangered and Sensitive Species

a. Flora

Though there are no Federally listed threatened or endangered plants within the HMA, one endangered species (Nitorphila mohavensis) and six threatened species (Astragalus phoenix, Centaurim namophilum, Enceliopsis nudicaulis var. corrugata, Grindelia Fraxino - pratensis, Ivesia eremica, and Mentzelia leucophylla) occur in the Ash Meadows area which is adjacent to part of the Last Chance HMA. Centaurium namophilum occurs at Point of Rocks Springs, which will undoubtedly be used by desert bighorn because the spring is adjacent to excellent sheep habitat. The BLM will coordinate with the U.S. Fish and Wildlife Service to insure that the Point of Rocks Springs remain available for future bighorn use. Section 7 consultation will be required prior to the reintroduction of desert bighorn sheep to insure that future bighorn populations will have no effect on this plant species or its habitat. Other T&E plant species are located far enough from bighorn sheep habitat to have little chance of being impacted.

The following table lists thos Federal and State candidate and sensitive species that occur within the habitat management areas.

Species Name	Location	Status
Briekellia knappiana	Bare Mountain	3C
Gilia ripleyi	Bare Mountain, Specter Range	3C
Penstemon fruticiformis spp. amargosae	Specter Range	2
Perityle megalocephala var. intricata	Bare Mountain, Last Chance	3C
Phacelia parishii	Specter Range	3C
Polygala subspinosa var. heterorhyncha	Specter Range	3C
Salvia funerea	Last Chance	3C

*Category 2 candidate species are those which information now in possession of the U.S. Fish and Wildlife Service indicate that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threats are not currently known or on file to support the immediate preparation of rules. Category 3C candidate species are those proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

Though it is not anticipated that bighorn sheep would impact the above species, the U.S. Fish and Wildlife Service will be requested to provide a biological opinion.

b. Fauna

There are no known threatened or endangered animal species within the habitat management areas. However, the warm springs pupfish (Cyprinodon nevadensis var. pectoralis) and Ash Meadows naucorid beetle (Ambrysus amargosus), endangered and threatened respectively, occur at Point of Rocks Springs. As in the case with T&E plants, these species will also be included in Section 7 consultation. Other endangered species that occur in the Ash Meadows area though outside the HMA include the Ash Meadows Speckled dace (Rhinicthys osculus nevadensis), Ash Meadows Amargosa pupfish (Cyprinodon nevadensis mionectes), and Devil's Hole pupfish (Cyprinodon diabolis). The peregrine falcon may also occasionally occur in the HMAs, though there has been no documentation of such an occurrence to date.

Federally listed candidate species that may occur in the HMA are listed below:

Common Name	Scientific Name	Status	Location
Desert tortoise	Scaptochelys agassigii	2	On bajadas and valley floors below 4,500 feet
Gila monster	Heloderma suspectum	2	Occurrence unknown, but may occur
Spotted bat	Euderma maculatum	2	Not documented, but may occur in higher elevations

The desert bighorn sheep is classified as a "sensitive species" in Nevada. According to BLM Manual 6840.31, the fundamental objective for sensitive species is to "maintain or increase current population levels of sensitive animals through early habitat protection or enhancement".

10. Livestock

There are only three livestock (cattle) grazing allotments within the HMAs; two are on that portion of Bare Mountain administered by the Battle Mountain District and one on a small portion of the Last Chance Range. The following table provides a comparison of livestock use within the respective HMAs.

HMA	No. of Acres in HMA	Grazing Allotment	Allotted Grazing Area with HMA Acres	Percent*
Last Chance	32,880	Mt. Stirling	1,840	6
Specter Range	23,460	None	0	0
Bare Mountain	20,400	Razorback	3,835	19
		Montezuma	8,585	42

*Based on the percentage of the HMA that is alloted.

Only six percent of the Last Chance HMA is grazed by livestock. This is primarily around the Congress Mine area near Mt. Montgomery. The same area is also used by wild burros.

Of the 12,420 acres open to livestock grazing in the north one half of Bare Mountain, approximately 4,755 acres are inaccessible to livestock. This leaves only about 7,665 acres of the total 20,400 acres of potential bighorn habitat that will actually be used by livestock. However, of the 7,665 acres, 5,900 acres along the lower slopes of the north end and in and around the Species Spring and Tarantula Canyon areas receives both livestock and wild horse and burro use. The following table lists the percent of each allotment that lies within an HMA.

Allotment Name	Total Acres in Allotment	Acres of the Allotment within an HMA	Percentage of Allotment in the HMA
Mt. Stirling	153,262	1,840	1
Razorback	72,880	3,835	5
Montezuma	538,297	8,585	2

11. Wild Horse and Burros

Wild horse and burro use presently occurs only in the Bare Mountain and Last Chance HMAs. The primary factor affecting current distribution of wild horses and burros is the availability of water. Because the Specter Range has no surface water, the range has no wild horse and burro use. Burro use in the Last Chance Range is restricted to the Mt. Montgomery area where water is available in association with Congress Mine, and springs in the northern Spring Mountains across State Highway 16. Wild horse and burro use also occurs primarily along the north one half of Bare Mountain with some burro use extending along the periphery of the entire Bare Mountain.

The Esmeralda-Southern Nye RMP identified two herd management areas that would in part overlap with the habitat management areas. First is the Last Chance Herd Management Area which is bounded on the north U.S. Highway 95, just opposite of the Specter Range, and runs almost due south between the Last Chance Range and the town of Pahrump, Nevada. Only about 3,000 acres in the Mt. Montgomery area of the HMA would be affected by this herd management area. The second is the Bullfrog Herd Management Area which overlaps most of that portion of Bare Mountain that lies within the BLM Battle Mountain District. This however, is only about one-fourth of the entire herd area. This herd management area includes approximately 12,000 acres of the Bare Mountain HMA as a potential conflict area between wild horses and burros, and desert bighorn sheep. Because there are no waters in the higher elevations, wild horse and burro use in the area is fairly restricted to the lower elevations. Therefore, the higher quality bighorn habitat receives little to no use by wild horses and burros.

Population figures for the two herd management areas, as determined by 1982 surveys, show that there are approximately 12 horses and 218 burros in the Bullfrog Herd Management Area and 12 burros in the Last Chance Herd Management Area. Current populations are unknown but are expected to be much higher.

12. Wilderness

There are no designated wilderness areas or wilderness study areas within the habitat management areas.

III. Analysis of the Proposed Actions and Alternatives

A. Proposed Actions and Environmental Impacts

1a. Proposed Action

The Nevada Department of Wildlife (NDOW) will reintroduce desert bighorn sheep to the Last Chance HMA by 1990 and the Specter HMA by 1991, and introduce desert bighorn to the Bare Mountain HMA by 1996. Augmentation releases will be made thereafter as necessary to achieve the objectives.

1b. Environmental Impacts

1. The reestablishment or establishment of desert bighorn sheep at the proposed numbers within the HMAs will increase utilization on native forage plant species from essentially no use or slight use to low to moderate use. However, use is expected to remain well within the proper use factors required of plants to maintain their health and vigor.

2. There will be added competition for limited forage between livestock, wild horses and burros, and desert bighorn sheep on approximately 7,740 acres (1,840 acres in Last Chance HMA and 5,900 acres in Bare Mountain HMA).

3. The livestock permittees on the St. Stirling, Razorback, and Montezuma grazing allotments will not be able to maximize livestock use within the respective HMAs due to potential restrictions on developing new waters to increase distribution of livestock within these areas and on some competition for forage. However, assuming that livestock use is currently at proper use levels, bighorn sheep will have little effect on current stocking levels. Most bighorn use will occur in areas inaccessible to livestock. The potential to develop new livestock waters is very limited due to the rough terrain outside existing livestock use areas.

4. The successful implementation of the proposed objectives will provide 264 annual recreation days valued at $16,000 to recreationist and $24,500 to the regional economy on an annual basis.

5. The proposed objectives will help to enhance the well-being of the desert bighorn sheep and to turn around the overall downward trend of the bighorn in the southwest.

2a. Proposed Action

The BLM, NDOW, and Fraternity of the Desert Bighorn (FDB) will cooperatively develop the following waters:*

Last Chance HMA

Catchment Name	Approximate Location
Last Chance No. 1**	T.18S., R.51E., Section 4, NW
Last Chance No. 2**	T.18S., R.52E., Section 9, S3/4
Last Chance No. 3**	T.18S., R.51E., Section 10, Center
Unnamed	T.18S., R.51E., Section 25
Unnamed	T.19S., R.52E., Section 6
Unnamed	T.18S., R.52E., Section 36
Unnamed	T.19S., R.52E., Section 1
Unnamed	T.19S., R.52E., Section 11
High Peak	T.19S., R.52E., Section 32

Specter HMA

Catchment Name	Approximate Location
Unnamed	T.16S., R.53E., Section 2
Unnamed**	T.16S., R.52E., Section 4
Unnamed**	T.15S., R.52E., Section 28
Unnamed**	T.15S., R.52E., Section 29
Unnamed	T.15S., R.51E., Section 26
Unnamed	T.15S., R.51E., Section 11

Bare Mountain HMA

Catchment Name	Approximate Location
Unnamed**	T.13S., R.47E., Section 2 SW¼SW¼
Unnamed**	T.12S., R.47E., Section 34 NW¼
Unnamed**	T.12S., R.47E., Section 21
Unnamed**	T.13S., R.47 3/4E., Section 23

*The exact location of the water developments will be determined after appropriate feasibility studies and project survey and design work has been completed.

**Waters to be developed prior to the introduction or reintroduction of bighorn to the appropriate HMA.

2b. Environmental Impacts

1. The development of nineteen water developments could result in as much as 1.5 acres of on-site disturbance due to construction activity. An addition twenty-eight acres could be partially disturbed due to access. However, where feasible, slickrock catchments will be built and materials will be flown in to the construction site in most cases. Based upon initial surveys, at least half the catchments will be slickrock catchments and most access will be on foot. This will drastically reduce the scope of the above surface disturbances.

2. The water developments (catchments) will have a minor impact on visual resources. All developments will be designed with the landscape architect's input to reduce visual impacts.

3a. Proposed Action

Locate bighorn sheep water developments insofar as practical, in areas inaccessible to wild horses and burros. If necessary, the water developments will be fenced to allow bighorn access but to keep wild horses and burros from depleting the water supply and degrading the forage resources.

3b. Environmental Impacts

This will not affect the ability to manage for wild horse and burro objectives as only a small percentage of the herd management areas overlap the habitat management areas. Consequently, actions can be taken to provide water for wild horses and burros within the appropriate HMAP without necessitating use of bighorn waters.

4a. Proposed Action

Competitive ORV events, including motorcycle events, are not compatible with crucial sheep habitat within the habitat management areas. All competitive events should be routed to avoid crucial habitat when alternative routes exist. When no alternative routes exist, events should be limited to existing roads (those roads shown on the most recent U.S.G.S. topographic maps) and no pitting should be authorized within the HMA.

4b. Environmental Impacts

Because it is difficult to predict future competitive ORV activity, the scope of potential impacts to competitive ORV events is unknown. However, the proposed action does not preclude such events from occurring, only when they will occur and to what degree spectators and pitting areas will be allowed.

5a. Proposed Action

Work with mining companies on a voluntary basis to avoid exploratory activity (i.e. drilling, blasting, etc.) within one mile of lambing grounds between February 1 and May 1, and within one mile of bighorn waters between May 1 and October 1.

5b. Environmental Impact

Seasonal restrictions on certain types of mineral exploration activity (i.e. blasting and drilling) could cause some delays in developing mineral resources. However, all proposed actions will be evaluated on a case by case basis and the operator will be encouraged to voluntarily comply.

6a. Proposed Action

Do no allow surface occupancy of oil and gas, and leasable minerals within one mile of lambing grounds between February 1 and May 1, and one mile of bighorn waters between May 1 and October 1.

6b. Environmental Impacts

There are no existing oil and gas or mineral leases within any of the three HMAs. Because the potential of these areas for oil and gas or leasable minerals are low, demand is expected to be low. Therefore, the potential impacts are minimal.

7a. Proposed Action

Do not issue mineral sales within crucial bighorn sheep habitat.

7b. Environmental Impacts

Because most of the terrain within the HMAs are steep and rugged, these areas have low suitability for mineral sales. There are no existing mineral sales locations within the HMAs. This action has low potential for impacting mineral sales.

8a. Proposed Action

Insure that the Specter HMA and those portions of the Last Chance and Bare Mountain HMAs that are outside a herd management area, as identified in the Southern Nye RMP, remain free of wild horses and burros.

8b. Environmental Impacts

By not allowing wild horses and burros to extend their range outside the Bullfrog and Last Chance herd managment areas, an opportunity will be lost for increasing their numbers and distribution. This was addressed in the Southern Nye RMP which designated those areas where wild horses and burros will be managed for. Therefore this is not a direct impact derived from the proposed action.

9a. Proposed Action

Insure that utilization of key forage species does not exceed an average of 50 percent of the current years growth. Range condition should be managed for the good condition class within the Tarantual Canyon/Species Spring area of the Bare Mountain HMA and the Mount Montgomery area of the Last Chance HMA.

9b. Environmental Impacts

This action is consistent with current Bureau policy. Bighorn sheep use in the Tarantula Canyon/Species Spring area and the Mt. Montgomery area will have minimal impact on existing forage resource users as most bighorn use will be on the steeper and rougher terrain.

10a. Proposed Action

Do not increase current livestock distribution from current use areas to new areas within the HMAs.

10b. Environmental Impact

This action will have minimal impacts to existing livestock grazing operations as only a small percentage of the three effected grazing allotments overlap the HMAs, and most of the area within the HMAs that are not already used by livestock are inaccessable to them.

11a. Proposed Action

Fences should be constructed only when absolutely necessary, and then to Bureau standards as described in the Bureau's Fencing Handbook.

11b. Environmental Impacts

The opportunity to enhance livestock grazing management through fencing within the HMAs is very limited due to inaccessible terrain. Consequently, this action will have no negative impacts and is consistent with Bureau policy.

12a. Proposed Action

Retain desert bighorn sheep habitat in public ownership.

12b. Environmental Impacts

Of the 15,080 acres of public lands identified in the Southern Nye RMP as potential land for disposal to the community of Pahrump, only about 500 acres of this would be impacted by this action. However, the land in question is in steep-rugged terrain unsuitable for development. Therefore this action has very little impact on the total land disposal potential.

B. No Action and Environmental Impacts

By not reestablishing or establishing desert bighorn sheep to the respective habitat management areas the following impacts will occur.

1. There will be reduced conflicts within overlap areas of approximately 7,740 acres between desert bighorn sheep, domestic livestock, and wild horses and burros.

2. An opportunity will be lost to enhance the well being of desert bighorn sheep in southern Nevada speicifically and the southwest generally.

3. An opportunity to increase consumptive and non-consumptive recreational days in southern Nevada by 264 days annually will be lost.

4. An opportunity to provide an estimated economic benefit of $16,000 annually to recreationists and $24,500 annually to the regional economy will be lost.

5. Mineral operations including leasables and saleables, and oil and gas operations will have less environmental concerns to deal with.

IV. Possible Mitigating or Enhancing Measures

A. Proposed Actions

1. All proposed water developments will be closely coordinated with other multiple-use resource disciplines prior to construction to reduce potential resource conflicts.

2. Removal of vegetation will be done only when absolutely necessary and to the minimum necessary to successfully complete the project.

3. The landscape architect will be closely coordinated with for site location and design of water developments to minimize impacts to visual resources.

4. No roads will be constructed to water development sites. Two-track ways created by vehicular traffic to any project sites will be rehabilitated.

5. Water developments will be located insofar as practical away from historic or likely ORV competitive events courses.

B. No Action Alternative

None

V. Recommendations for Mitigation or Enhancement

Incorporate all the mitigative measures as identified under the proposed actions.

VI. Residual Impacts

All of the impacts identified under the proposed actions (part IIIA.) will for the most part be residual impacts not significantly changed with the recommended mitigative measures.

VII. Relationship Between Short-Term Use and Long-Term Productivity

The proposed actions increase the productivity of the areas in question both during the short-term and long-term. Areas not now being used by livestock or big game will be used on a sustained basis thus enhancing multiple-use values of the land without significantly impacting any particular use.

VIII. Irreversible and Irretrievable Commitments of REsources

There are no commitments of resources that are either irreversible or irretrievable.

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